16

The PROPER STUDY OF MANKIND...

An Inquiry into the Science of Human Relations

STUART CHASE

Here are the findings of many scientists about human behavior, presented for the first time comprehensively and in popular form. No subject is more important, for until we understand human and group relations we cannot achieve a good society, or avoid domination by the machines we have made.

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THE PROPER STUDY OF MANKIND...

An Inquiry into the Science of Human Relations

By STUART CHASE

Know then thyself, presume not God
to scan;
The proper study ot mankind is man.

ALEXANDER POPE'S *Essay on Man*

Publishers HARPER & BROTHERS *New York*

BOOKS BY STUART CHASE

THE TRAGEDY OF WASTE

YOUR MONEY'S WORTH (WITH F. J. SCHLINK)

MEN AND MACHINES

MEXICO

THE ECONOMY OF ABUNDANCE

GOVERNMENT IN BUSINESS

RICH LAND POOR LAND

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THE ROAD WE ARE TRAVELING

WHERE'S THE MONEY COMING FROM?

DEMOCRACY UNDER PRESSURE

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G-C

It might be
The final test of man, the narrow way
That he should face this darkness and this death
Worthily and renounce all easy hope
All consolation, all but the wintry smile
Upon the face of truth.

—ALFRED NOYES

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How This Book Came to Be Written

THREE things led me to make this study: first, a lifelong interest in social problems and especially in applying the scientific method to human affairs; second, a growing anxiety about the state of the world and the dilemmas of the atomic age; and finally an invitation conveyed in a conversation at luncheon at the Harvard Club in New York three years ago. It has been my hardest assignment to date I think, and the most rewarding for the lighted vistas it has given me into a dark continent of future knowledge. It has called on every bit of learning and experience I possess, and has made me wish many times for deeper knowledge and a wider background.

For years too I have wished to read some such book as this, for my own information. Where, I kept wondering, were the handholds to the problems of day-by-day living, handholds which would remain firm? What had anthropologists, psychologists, sociologists, to tell us about such problems that was in any way comparable to what the physicists and the medical men had to tell us about thermodynamics and filtrable viruses—laws and principles and techniques which a man could rely on?

So when it was suggested by Donald Young of the Social Science Research Council and Charles Dollard of the Carnegie Corporation that I run a kind of chain and compass line across the whole front of the sciences devoted to human relations, I was immediately interested. It connected with a deep and fundamental quest for certainty which had troubled me for many years.

Again, the human sacrifice at Hiroshima, beyond anything the Aztecs had ever practiced, had shocked a great many of us into a realization that an era had definitely ended. And if modern man were not altogether obsolete, at least a time for revaluations and new concepts was at hand, perhaps the most ominous in human history. Fitzpatrick, the great cartoonist of the *St. Louis Post-Dispatch*, has expressed this feeling in a strong, simple drawing. He shows a vast bomb with a ferocious warhead leaning against a wall, beside an equally tall and solid question mark. Two little men in the foreground are looking up at the huge monoliths. The

bomb is labeled "How to kill everybody," and the other "How to live with everybody." This study is an attempt to appraise the question mark. What knowledge can be assembled against the bomb and in favor of living with everybody? In 1733, Alexander Pope in a famous poem said that the proper study of mankind was man. How far has the study progressed in two hundred years?

Of course no one human being could hope to answer that question. Yet it called for an answer on a scale that the intelligent layman could grasp. The answer must get the subject into clear perspective and reasonable proportion, and it must not deal exclusively in high abstractions. It must offer concrete evidence to illustrate what has been done in the various fields of social science, and point out what gaps need to be filled. The answer could not be the work of a great specialist nor yet of a complete outsider—not the man who "learns more and more about less and less," so much as the man who tries to see how the various parts fit together.

I have had many stimulating encounters with social scientists all over the country in this essentially co-operative enterprise. This is one reason why most of the material is American rather than British or French or German. I do not think, however, that I have missed much European material. Although other countries began research into human relations, today anthropology, sociology, social psychology, public opinion research are very largely American studies; and by far the most interesting work in economics, political science, social statistics, demography and human geography, is being done here. This is in a way unfortunate, considering the great need for co-operative international research; and perhaps something can be done to stimulate it abroad, to turn more energy into scientific investigation in other countries.

My first conferences were with Young and Dollard, who have followed the project step by step and given me invaluable help. Before accepting the assignment at all, I consulted Raymond Fosdick, who has planned and encouraged many studies in the application of science to human relations; and he urged me to attempt it. Then I went to Washington to meet with groups of social scientists—some still in uniform—who had been active in war work. Colonel John Flanagan described the great program for the

scientific selection of pilots and other airmen. Commander Alexander Leighton talked of his experiences with Japanese-Americans in the Arizona desert and his work in Japan. Others outlined their work in selecting "cloak and dagger" men for the OSS, in manpower analysis, economic controls for inflation, the selection of officers for the Army. Samuel Stouffer described how he felt the pulse of ten million GI's, via the Army studies of troop attitudes and opinion which he largely engineered.

The next step was the preparation of a questionnaire, sent out by Young, Dollard and myself, to representative scientists all over the country. They were asked to name what they considered the outstanding accomplishments of social science; significant work in process; and to outline gaps in existing knowledge which needed to be filled. One question: "If you were given $10 million for research how would you spend it?" brought in some especially interesting replies. Messrs. Roper and Gallup would stand aghast at this questionnaire as a reliable sampling of the social science "universe," but it did help me to collect a rich array of achievements in the field, and to find out what was bothering many social scientists today, especially the "great unanswered questions."

Along with the questionnaire came visits to various universities, including Harvard, the Massachusetts Institute of Technology, Yale, Columbia, Pennsylvania, Chicago, Texas, California. Sometimes I talked to individual faculty members, sometimes to groups, once or twice to a whole department in a kind of mass seminar. I also talked to students, both graduate and undergraduate, trying to find why they had chosen social science as a career, and whether the curriculum lived up to expectations. (It didn't always.) I carried on an extended correspondence subsequently with a number of these professors and students. I also attended the second international conference of the public opinion research experts at Williamstown, absorbing some of the astonishing developments in this lusty new discipline.

First and last, I went through enough monographs, books, articles, and documents to provide material, including the personal interviews, for nearly three thousand 5 by 8 cards—the hard core from which the present book is written; a total field immensely wider than I had ever dreamed.

At one point in this branching series of investigations I was

close to abandoning the whole project. It began to get out of hand; too big and too complicated for one man to be responsible for. Fortunately, at this juncture my good friend Wesley Mitchell wrote me a note saying in effect: "Be yourself." When the significance of these two words really dawned, I proceeded, if not gaily, at least purposefully, on my way, realizing that I could not do justice to all the information I had accumulated. To do so would demand another Encyclopedia of the Social Sciences even bulkier than the one Alvin Johnson edited so brilliantly.

So I lowered my sights to a more modest and sensible goal, dividing the task, as you will see from the Table of Contents, into three parts. *First,* a conceptual framework, defining the scientific method itself, and applying it to both the natural and social science field. *Second,* a sampling of the field, especially where the scientific method was in evidence and where results could be expected to stand up. In selecting cases I followed Wesley Mitchell's advice, describing only those which I felt competent to discuss and which specially interested me. These cases are not necessarily the outstanding achievements of social science. Many fine examples have been neglected—as, for instance, Mitchell's own excellent work on business cycle theory. Great areas of social psychology have been neglected. Labor-management problems have been confined to the new "anthropological" approach, associated particularly with Elton Mayo. An enormous amount of hard work and many excellent techniques in labor relations on the part of such men as Sumner Slichter, Morris L. Cooke, William Leiserson, have been neglected. . . . And so on.

I apologize to all these devoted students and scholars whose work has been inadequately appraised, or by-passed completely. I simply could not get around to it. Perhaps in some future study I can catch up with them, being confident meanwhile that history has long since caught up with them.

My wife, Marian Tyler Chase, helped to supplement my reading, especially in psychology. Her editorial assistance has been invaluable. Elmo Roper put most of his staff checking the chapters on the polls, and I owe much to these kind helpers. Our neighbors, Christine Loring and Lola Donnell, rendered unremitting and intelligent secretarial aid.

I am grateful to J. Frederic Dewhurst, John Dollard, John

Gardner, Pendleton Herring, Ralph Linton, H. A. Murray, Talcott Parsons, Don K. Price and Paul Webbink for a reading of the manuscript, but I am of course responsible for the final draft.

Finally, in addition to those mentioned earlier, I would like to name and thank the men listed below. All of them by replies to the questionnaire, or personal interview, or correspondence, have taken time to give me data, help forge my ideas, and to keep me, at least so I hope, from straying too far from the main line of inquiry.

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Redding, Connecticut
May, 1948

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PART I

Charting the Field of Human Relations

We are discovering the right things in the wrong order, which is another way of saying that we are learning how to control nature before we have learned how to control ourselves.

—RAYMOND FOSDICK

CHAPTER 1

Is Man a Part of Nature?

THIS book is an attempt to explore the possibilities of applying the scientific method, which has proved so successful in problems of matter and energy, to the problems of human relations. The methods in use by many leaders and statesmen today leave something to be desired. Are there any more dependable ways to promote human well-being and survival?

The story begins at least 300 years ago. Not long after Galileo dropped his shot from the Leaning Tower, some of the most famous scholars and scientists of England gathered for a weekly discussion in the rooms of Sir William Petty at Oxford. Petty had been by turns a cabin boy, seaman, surveyor, inventor, physician, professor of anatomy, professor of music, member of Parliament, philosopher, landed proprietor, statistician, author, and political economist—in brief, a sturdy descendant of the versatile Elizabethans. The men around his table included Robert Boyle, Christopher Wren, Bishop Wilkins, Ward the astronomer, and later Hooke the physicist. When the club sat in London, as it sometimes did, the King asked to become a member. Newton also joined the distinguished company.

They called themselves the "Invisible College" because they were in revolt against the sterile scholasticism of Oxford and Cambridge. Following Galileo and Bacon, they wanted fewer abstractions, more observation and experiment in discovering the secrets of nature. Sometimes a member would perform an experiment before the group and they would sit late, doubtless over their wine, discussing its implications. Yet they were only fifty

years from the time when a chemist in the Sorbonne at Paris had to conform to the teaching of Aristotle on pain of death. Soon after the King applied for membership the Invisible College became the Royal Society. To this day it has fought for experiment against lofty abstractions and self-evident truths.

Sir William Petty presently published a study on population theory, and then his unique work, *Political Arithmetick*. John Graunt, another charter member, made a careful analysis of mortality rates in the London plague. Halley, the astronomer for whom the comet was named, constructed the first life table and became the father of actuarial science and the principles of insurance. The Royal Society published the table in 1693.

Thus while these great pioneers of the scientific method were chiefly concerned with astronomy, gravitation, celestial mechanics, chemistry, navigation, they did not neglect to inquire into population theory and social statistics as well. They set in motion the modern sciences dealing with man and his behavior, as well as those dealing with energy, space, and time.

It is interesting to recall this, for since their day the physical sciences have forged rapidly ahead, with Hiroshima as a terrifying climax to their advance. People have begun to ask whether the human sciences can catch up with the atomic bomb. Now that man has found the secret of the ultimate energy in nature has he the knowledge, or can he find the knowledge, to control it? Pessimists say that technical invention is now completely out of control and throw up their hands in despair.

Rather than accept so hasty a judgment, the author of this book, with the co-operation of a number of distinguished social scientists, has been surveying the field to try to see what the sciences dealing with man have accomplished since the Royal Society gave them a modest start 300 years ago. Where are they headed? What can be expected from them? The hard core comprises the five disciplines of cultural anthropology, social psychology, sociology, economics, and political science. The problems they investigate are the crucial ones of culture, race, education, sex, the family, international relations, communication, government, business cycles, learning theory, group dynamics, public opinion, and so on—the whole broad field of human relations.

What are the chances of using these disciplines to cope with

nuclear fission, of controlling the results of natural science with human science? We shall find, I think, that an impressive beginning has been made in this direction, far more than most of us realize, and that the prospect is by no means hopeless.

The startling success of the Manhattan project has forced social scientists to come of age. An unprecedented responsibility has been laid upon them. They have got to be sure of what they know and what they do not know. If we can help the intelligent layman realize that social science is the last best hope for man's continuing on his evolutionary way, unimpeded by gamma rays, this book will not have been written in vain. Without the support of thoughtful people everywhere social scientists cannot fulfill their important new role.

From another point of view, atomic energy is but the capstone on a series of cumulative problems with which natural science has presented mankind. Ever since the first power-driven loom began to throw cottage weavers out of their livelihood, technology has been breaking up social patterns worn smooth by the centuries. Many if not most of our troubles today, from the bomb to strikes and the divorce rate, can be regarded as by-products of the successful solution of technical problems. Once these successful inventions came out of the laboratory and the pilot plant into the workaday world, they created a whole series of acute social problems. Henry Ford, for instance, gave us Model T, and presently the robot on the assembly line and the threat of mass neuroses accompanying mass production.

Social science might be defined, on a high level, as the application of the scientific method to the study of human relations. What do we know about these relations that is dependable? The "wisdom of the ages" obviously is not good enough, as the state of the postwar world bears eloquent witness. When a race riot threatens, or a depression, or a coal strike, where can we turn for accredited knowledge to help us meet the crisis? Not random advice, but tested, reliable findings?

As we shall see, there is far more knowledge already available than has been put to use. But really to solve the big problems of human relations with some confidence that they will stay solved requires at least three things:

1. A great increase in the scientific study of human groups and societies.

2. A far wider popular understanding of what constitutes the scientific method, and a willingness to back it.

3. A political structure in which scientific knowledge about man in society is applied for the benefit of the people. (Autocrats can use knowledge *against* the people as Goebbels demonstrated.)

For too long a time the social sciences in America have been divided into tight compartments with little interchange of ideas. As one critic remarked, they have cut man into many pieces and the pieces do not fit together. This situation is rapidly changing, however, due especially to the teamwork developed during the war. It is probable that before long the separate disciplines will merge into a single broad discipline, perhaps to be called the "science of man." At the same time there will be more subdivisions for the study of special problems.

The Senate debates the science of man

Few people, even well-educated people, know what the social sciences are concerned with, how much verifiable knowledge they have accumulated, or what they have to offer at the present time. Listen, for instance, to the highest legislative body in the land debate the subject. It is a warm summer day almost a year after Hiroshima. The scene is a hearing room in the Senate Office Building at Washington. The National Science Foundation bill is up for discussion and various prominent citizens are on hand to help the senators consider it.

This bill proposes that the federal government subsidize science on a generous scale, especially through fellowships for talented students. In pre-atomic days such a bill would have been of academic interest only; Congress had so many more important things to subsidize, such as beet sugar. But the bomb has had its effect. Scientists are no longer invariably classed, along with college professors, as people on the queer side.

By and large the senators in the hearing room are in favor of the bill. But should "social science" be subsidized too? The senators have serious difficulty in finding out what social science means. Let us select a few representative quotations.

Senator Fulbright: I asked an able scientist yesterday if he would define social science. He said: "In the first place I would not call it science. What is commonly called social science is one individual or group, telling another group how they should live."

Senator Hart: The fact is that social studies and basic science are not sufficiently alike either to be joined by the same legislation, or to be administered by the same organization. . . . No agreement has been reached with reference as to what social science really means. It may include philosophy, anthropology, all the racial questions, all kinds of economics, literature, perhaps religion, and various kinds of ideology.

Senator Smith: I should like to see social science given aid, but I think their problem is such a different one that the two should not be joined in this bill. . . . We are trying to subsidize pure science, the discovery of truth. This has nothing to do with the theory of life . . . nothing to do with sociology.

Dr. John Milton Potter (late president of Hobart College): Some people think you can extend the strict scientific method into almost any region of human affairs. I don't happen to believe it. I was trained as a historian. . . . These things it seems to me could be far better supplied by experienced men like Mr. Baruch, or by you gentlemen here in the Senate. . . . Statistics . . . ought to be interpreted by the Congress of the United States. . . . Congress should provide for a division of the *humanities,* rather than the social sciences. Such a division should not engage in research . . . it should stir concern among young men and women for the accumulated wisdom of our civilization.

After some days of discussion, the Senate passed the bill, but with social science left out. There were to be no subsidies for the study of man. George A. Lundberg, after carefully analyzing the testimony in the *Scientific Monthly,* finds four reasons for the exclusion:

1. It was argued by many witnesses that man is not a part of nature to be studied with the same tools as those employed in physics and chemistry. Social science, they said, is more concerned with reform movements, propaganda, ideologies and 'isms.

2. It was argued that methods in the social disciplines were so different from methods in the natural sciences that it would be dangerous to combine them in one foundation.

3. It was feared that social science research could easily be corrupted by pressure groups or by politicians.

4. Finally, it was repeatedly pointed out that we really know

the solutions to all our social problems. If we would but listen to the philosophers, the seers, and the writers of great books down the ages and search our souls, we would find the answers. What we really need to do—and this came out repeatedly in the testimony—is to *educate* people so they will read and listen. Not research, not new knowledge, but education in old knowledge is the key.

The Senate's seminar in social science was a pretty confused affair. It showed clearly that people, even very distinguished people, are just beginning to be aware of the subject. It suggested that social science might include, in turn: philosophy, religion, anthropology, the wisdom of congressmen, the wisdom of Mr. Baruch, "racial questions," the Great Books, economics, literature, the wisdom of the ancients, "telling other people how they shall live," the "theory of life," sociology, history, statistics, propaganda, moral reform, and "various kinds of ideology"—a curious and disorderly list.

Also it was frequently emphasized that whatever social science was, it was quite different from the natural sciences such as physics and chemistry. Implicit throughout was the assumption that the gentleman who had the floor knew practically all there was to know about the matter, and needed no correction by college professors or other theorists. Every man his own social scientist was the general idea. Or as Raymond Fosdick has said:

> . . . There seems to be a widespread belief that we are all social scientists, all of us economists, and in this egalitarian democracy of ours, any man's ideas on any problem in sociology are as good as any other man's. We need to realize that what is true of physics and biology is true in this area also. The same degree of special knowledge is required. Social issues cannot be clearly defined and understood except on the foundation of hard, painstaking work.

Six methods for solving problems

If we are to talk about social scientists and scientists generally, we had best get a pretty clear idea of what the term "science," rigorously interpreted, refers to. Fundamentally, it is a method for obtaining knowledge and solving problems. Down the ages mankind has evolved a variety of approaches to meet the troubles and the questions which have continually confronted him. It is possible to identify at least six methods:

1. Appeal to the supernatural.
2. Intuition.
3. Appeal to authority.
4. Pure logic.
5. Common sense.
6. The scientific method.

These methods, of course, are not mutually exclusive but often overlap. Any of them may succeed but only the last *must* succeed if the right questions are asked with enough patience and honesty.

A Mexican Indian who has the problem of drought in his cornfield may pray to the Virgin of Guadalupe and also, to play safe, bury a little stone idol in the corner of the milpa. The Indian probably does not distinguish clearly between prayer and magic, or even separate them from the authority of the priest and the village herb-doctor.

Common sense and logic have their place in the laboratory, and so has intuition, which is a loose term for a half-conscious blend of many minute observations. A good outfielder starting to run at the crack of the bat, is an example of superlative intuition. Magic is the only method which has been entirely banished by our technical experts, yet to primitive men magic may have been a crude attempt at science, as Sir James Fraser suggested in *The Golden Bough:*

Thus the analogy between the magical and the scientific conceptions of the world is close. In both of them the succession of events is assumed to be perfectly regular and certain, being determined by immutable laws, the operation of which can be foreseen and calculated precisely; the elements of caprice, of chance, and of accident are banished from the course of nature. . . . The fatal flaw of magic lies not in its general assumption of a sequence of events determined by law, but in its total misconception of the nature of the particular laws which govern that sequence.

Prayer, Fraser thought on the other hand, implied a helpless reliance on capricious supernatural force. A modern psychiatrist would credit prayer with power to change some human attitudes and thus with potential value in many stubborn problems. Even a scientist may pray for the success of his experiment but he prays as a man, not as a scientist.

Eddington in a famous passage in *Space, Time and Gravitation* has shown the limitations of common sense. What nonsense, he says, to think that the table on which one writes is a collection of electrons moving with prodigious speed in spaces relatively as empty as the spaces between the planets in the solar system! What nonsense to believe that this thin air presses on every square inch of one's body with a fourteen-pound weight. What nonsense to think that the light one sees in the eyepiece of this telescope left a star 50,000 years ago. . . .

Common sense tells us that the world is flat, that the sun goes around the earth, that heavy bodies always fall faster than light bodies. The practical man, that paragon of common sense, was once defined by Disraeli as "one who repeats the errors of his forefathers."

The Greeks and Egyptians caught a glimpse of the scientific method, but even the great Pythagoras, who established the nature of proof, went wandering off into the mists of number magic; and the great Aristotle, father of logic, perpetuated many errors that might have been cleared up by a few simple observations—such as the number of teeth in a horse's mouth. Meanwhile the three laws of formal logic have been superseded in scientific thinking by a multivalued logic.

Method number six

Today the scientific method is universally applied to problems connected with matter and energy, and occasionally applied to many other sorts of problems as we shall see. It is the only method yet discovered which produces knowledge that stays put, at least until a closer fit to reality is found. Sometimes I think of scientific achievement as a storehouse with many well-filled shelves, their contents neatly classified and ready for use by any qualified student. An engineer could not build a bridge without going to the storehouse for the equations of stress and strain and the properties of the steel and cement he plans to use. A doctor could not write a prescription without referring to the storehouse.

The scientific method does not tell us how things ought to behave, but how they do behave. Clearly there is no reason why the method should not be applied to the behavior of men as well as to the behavior of electrons. There are social experiments and

physical experiments and the scientific method can be used most advantageously in both. We shall record in the chapters which follow many examples of its application to man and society. On the level we are discussing there is no difference between social science and natural science. On this level we define social science once more as *the use of the scientific method to solve questions of human relations.* "Science" goes with the method, not with the subject matter.

"The social realm," said the great sociologist Emile Durkheim, "is a natural realm which differs from the others only by a greater complexity. Now it is impossible that nature should differ radically from itself in one case and the other in regard to which is most essential. The fundamental relations that exist between things . . . cannot be essentially dissimilar in the different realms."

Certainly the relations cannot be called dissimilar in kind—at least until evidence comes in to the contrary. The cleavage which troubled the senators, and troubles so many other people, probably goes far back to a time before the Royal Society and Copernicus when man was at the exact center of the universe and a very special creation indeed. As a half-god man cannot be investigated; as *homo sapiens,* a creature of this earth, a small planet in a relatively small solar system, he can.

Man with a notebook

The informal picture I carry around in my mind of a social scientist is a man with a notebook watching people behave. He may be watching a town meeting in New England, a religious riot in India, a nursery school in New Haven, a Japanese internment camp. Perhaps my most vivid picture is the man with the notebook at the Hawthorne plant of the Western Electric Company, finding out in a world-famous controlled experiment what makes workers work.

The scientific investigator puts down what he sees, not what he wants to see. He puts it down in such a form that other observers can verify his findings. Without a situation where the findings of one competent observer can be checked by other competent observers and agreement reached, I am afraid we should have to surrender the idea of the scientific method.

It is wonderful what one person can see all by himself, and the

poems he can make about it, and the books he can write about it, and the hearts he can thrill. But nothing goes into the storehouse. His beautiful phrases may be true, but there is no proof. Science, said the late Morris Cohen, is not satisfied with psychological certitude.

There was a man at the Senate hearings who understood this. He is a great physicist. His words constitute a kind of theme song for this study of ours.

Dr. J. R. Oppenheimer: I am aware of the difficulty of establishing in these fields [the social disciplines] rigorous criteria of competence and qualification. Nevertheless at a time when the whole world realizes that many of its most vital problems depend on an understanding of human behavior . . . and of the regularities which underlie the operations of our varied society, we should recognize the great benefits which may come from attracting men and women of prominence to the study of these questions.

Dr. Oppenheimer is calling for the scientific method to be applied to the "regularities" which underlie human societies. This term is especially interesting coming from a physicist. There are statistical regularities which underlie the unpredictable behavior of individual molecules in a gas. They are known as Boyle's law—formulated by the same Robert Boyle who was a founder of the Royal Society. No individual person can tell if and when he is going to get into a smashup, but Dr. Louis Dublin of the Metropolitan Life Insurance Company can calculate within a small margin of error how many Americans will be killed in automobile accidents next year, or will die of any of the major diseases.

Let us now try to get closer to the scientific method. It is clearly the heart of our inquiry. It was the procedure which culminated in a chain reaction and may be the only procedure which can save us from it.

CHAPTER 2

The Scientific Method in Action

A SCIENTIST and his friend were driving through Wyoming and saw a flock of sheep up on a mesa.

"They've just been sheared," said the friend.

"They seem to be on this side," replied the scientist.

You do not take anything for granted when you enter the monastery of science. You take the vow of utter ignorance until the evidence comes in. This is quite contrary to normal behavior, which abhors explanatory vacuums; and so it is not surprising that congressmen sometimes think scientists queer, and that the Army called the men on the Manhattan project "long-hairs." There is a curious paradox here—the men who know the most assert they know nothing at all except under rigorously limited conditions.

"We come to have a great caution," says Dr. Oppenheimer, "in all assertions of totality, or finality or absoluteness. . . . We learn to throw away those instruments of action, and those modes of description, which are not appropriate to the reality we are trying to discover, and in this most painful discipline, find ourselves modest before the world."

The popular idea about the bomb, according to the late Selig Hecht in *Explaining the Atom,* was that a long-hair named Einstein had a kind of midnight vision about it. He took the vision to President Roosevelt and said it would cost two billion dollars. The President, being a sporting man, accepted the gamble and appointed a general to direct the actual production, as long-hairs are notoriously impractical. There lingers among us, says Hecht, the fancy that a scientist is a man who has crazy ideas

which occasionally work out. The atomic bomb was one which worked. Ideas are supposed to come by spontaneous combustion with little or no relation to the past. The scientist is the modern magician.

This popular notion is at the furthest remove from the facts. Scientists are not like that at all. Nowadays they stand, like teams of acrobats, on one another's shoulders in a pyramid which spreads upward. The atomic bomb, far from being a sudden apparition in Dr. Einstein's brain, was the culmination of the lifework of hundreds of scientists, extending back for at least 150 years—not to mention Democritus who in 400 B.C. first suggested that matter might be discontinuous and made up of indivisible particles called atoms.

Atomic ladder

Suppose we prepare, with the assistance of Dr. Hecht, a kind of ladder reaching back to the beginning of serious work on the atom. It will give us a picture of science as a continuing process, one discovery leading to the next, instead of a series of unrelated brainstorms. If one of the rungs had been missing, there would have been no chain reaction in uranium or plutonium in 1945.

Lavoisier, the great French chemist, in 1780 determines the difference between elements and compounds, and lays down the principle of the conservation of matter.

Dalton in 1808 formulates early atomic theory. All atoms of a given element, like iron, are alike and combine with atoms of other elements to form molecules. The concept was that of a tiny billiard ball.

Mendeléev, Russian chemist, in 1869 arranges the 75 known elements into the famous Periodic Table, and *predicts* a total of 92 elements by virtue of blanks in the table. He is presently confirmed by experiment.

J. J. Thompson discovers the existence of charges which he calls electrons.

Roentgen in 1895 discovers X-rays.

Becquerel in 1896 discovers that uranium is radioactive.

The *Curies*, Marie and Pierre, find radium and receive the Nobel prize in 1903. A stirring story.

Rutherford breaks into the atom. The billiard ball model is

replaced by the solar system model—a nucleus surrounded by revolving electrons. (No one, of course, has ever seen an atom or probably ever will.)

Bohr works out the electron circuits of various atoms.

Soddy in 1910 evolves the idea of isotopes, so essential to understanding the atom's insides, and *Aston* finds that nearly all elements do indeed have isotopes.

Urey gets the Nobel prize for heavy water containing the hydrogen isotope. We are getting closer.

Chadwick locates the neutron in the atom's nucleus and thus clears up a twenty-year riddle. He gets the Nobel prize for this in 1935.

Einstein's equation, $E=MC^2$, first evolved in 1905, is now in the 1930's brought in to explain the loss of mass when protons and neutrons combine to form helium. Matter has been transformed into energy as Einstein predicted!

Hahn and Strassmann in 1939 bombard uranium with slow neutrons and get barium, considerably to their astonishment.

Lise Meitner, contemplating the above, evolves a revolutionary hypothesis. Suppose this bombardment can be made to continue releasing neutrons and energy in a chain reaction?

Frisch, Fermi, Szilard, and others in March 1939 confirm Meitner's hypothesis. Terrific excitement in the scientific world! Over one hundred papers on atomic fission are published within a few months.

Chadwick in 1940 is certain that anyone can make an atomic bomb with the published knowledge available, provided he wants to spend the time and money.

This long ladder, rung by rung, has at last led to the secret of atomic energy and unlocked it. There are many more rungs, of course, than have been included here. We are not trying to explain the atom but to give a brief indication of how one discovery leads to the next. "The real secret," says Hecht, "is that there is no basic secret." In 1936, before the work of Hahn and Strassmann on uranium, no one could have made a bomb, not with all the money in the world. There has to be knowledge in the storehouse before it can be applied.

True, the Manhattan project was a miracle of teamwork and

developed some astonishing methods for taking knowledge about nuclear fission, which was now in every university, and making a practical explosive with release mechanisms and other intricate devices. But the next group of scientists and engineers to make a bomb might do it more simply or cheaply. In 1940 five separate processes were known for accumulating fissionable material. Yet one congressman was so ignorant of the atomic ladder that he introduced a bill providing the death penalty for anyone who gave away the scientific secrets of atomic energy!

Two worlds

Many congressmen and laymen, supposedly well educated, are not only ignorant of what social science stands for, but often alarmingly ignorant of how a scientist uses his mind when he tackles a problem. It is as though we were divided into two intellectual worlds with almost no communication between them. The long-hairs can do dreadful things to the rest of us, and the rest of us cannot imagine how they do it. The activities of political and business leaders, on the other hand, are equally incomprehensible to atomic physicists.

Throughout the war President Conant of Harvard, who is also a distinguished chemist, was trying to speed the introduction of such scientific projects as radar. He tells the story in the Autumn, 1946, issue of the *Yale Review*. He kept running into generals, admirals, high politicos, and tycoons who had no idea what he was talking about. They were not stupid men, he says, but mostly very able men at the top of their callings. They had never learned, however, in school, in college, or in life, what the scientific method meant. They were ignorant of what scientists could and could not do. They failed to grasp the essentials when scientists were discussing science for military purposes. Sometimes it seemed as if they thought a scientist was a producer of black magic.

This is hardly an ideal approach to the atomic age. Western civilization, if not the whole world, is now utterly committed to applied science. Without it perhaps half the world's population would die off in short order. It is a very serious matter when great statesmen, generals, and industrialists lack a clear idea of this man-made activity which both sustains and threatens the race. Not

only our leaders but the man in the street should have at least a rough notion of what science is up to. So far, the toothpaste ads sum up the popular conception—a chap in a white coat and a Van Dyke beard looking down a microscope.

Another ladder

In the late 1500's, there lived a Danish astronomer named Tycho Brahe, who spent a good part of his life observing the planets. He designed instruments and observatories; he made copious notes and the most accurate measurements of his time. Shortly before his death, a new assistant joined him at his observatory near Prague—the young German professor, Johann Kepler. Kepler inherited Tycho's notes and worked up from the material a brilliant and coherent theory. He made very few observations of the stars himself; indeed, his eyesight was defective and it was said he hardly ever looked through a telescope. But he had a powerful mind and from the notes he deduced the behavior of the solar system. His rigorous logic applied to the careful observations of another man discovered the rules which sun, moon, and planets obey.

Why do they obey these rules? It remained for Isaac Newton to perform the third act in the drama. Newton was tormented by the problem of why the planets should revolve as Kepler had proved they did. What force propelled them? Eventually he worked out the great laws of gravitation, though he had also to invent a special language, the calculus, to express them. Scientists everywhere applauded and then relaxed. This, they thought, was the end of the play—Absolute Time, Absolute Space, Absolute Truth. When many years later Einstein demonstrated that Newton's laws were not absolutes but held good only under limited conditions, the scientific world rocked to its foundations.

Now observe carefully what happened next. To me it explains the scientific method better than any other one thing. Einstein did not say his theory was true, he simply said that was the way the equations came out. To prove its truth he outlined three specific experiments for other men to make. They dealt with the perihelion of Mercury, the bending of light rays near the sun, the displacement of certain lines in the spectrum.

The Royal Society sent out an expedition to observe the pos-

sible bending of light during a solar eclipse. In the London *Times* for November 7, 1919, we find these two headlines:

THE GLORIOUS DEAD. ARMISTICE OBSERVANCE.

REVOLUTION IN SCIENCE. NEWTONIAN IDEAS OVERTHROWN.

A direct observation of nature had corroborated the theory of the curvature of space. Contrary to the headline, however, Newton's ideas were not overthrown; they just had to move over and operate as a special case within a larger general law.

In due time other careful experiments verified all Einstein's predictions. His hypothesis was confirmed and reconfirmed. The scientific world had to agree that the facts supported him, however much the inner feelings of individual scientists were ravaged. As E. T. Bell has said: "The fact has always been for the physicist the one ultimate thing from which there is no appeal, and in the face of which the only possible attitude is a humility almost religious."

Some day we may expect a new genius to appear—as Kepler, Newton, and Einstein appeared—who will produce a generalization which fits the facts of nature even closer than the theory of relativity. Scientists complain now that relativity and the quantum theory do not get along any too well together and a genius would be very welcome who could reconcile them.

A ladder in social science

In the field of human relations, long scientific ladders are harder to find. But there is one at least which goes back to the early days of the Royal Society and before. It concerns population theory, and runs like this:

1500's. Parishes in England, Germany, and Holland begin keeping records of christenings, marriages, burials. With these records birth rates, marriage rates, death rates could be calculated.

1654. Pascal and Fermat formulate the theory of probability as a result of their interest in gambling odds.

1693. The Royal Society publishes Halley's life tables, the basis of actuarial science.

1749. The Academy of Science in Sweden conducts the first national census.

1790. First US census is taken as provided by the new Constitution. Recognized to be the best national count so far.

1798. Thomas Malthus, aged 32, publishes his immortal essay attempting to prove that the exponential curve of man is steeper than that of his food supply.

1801. First British census. It bears out the statistical predictions of Sir Frederick Eden.

1812. La Place carries probability theory another long step forward.

1836. Quetelet in Brussels publishes some observations on statistical regularities as disclosed in population figures. One can use them for prediction. His *Social Physics* is bitterly attacked as exhibiting the philosophy of determinism. He defends himself with a remarkable statement that acts of free will show an even greater statistical regularity!

1883. Galton, a cousin of Darwin, publishes *Inquiries into Human Faculty*, developing the principle of frequency distribution curves.

1890. Hollerith introduces punch cards in the US census—a landmark in social statistics!

1899. Karl Pearson publishes the *Grammar of Science*, which still dominates statistical theory.

1932. R. R. Kuczynski develops the "reproductive index," to predict population growth, based on potential mothers. Another landmark, the most significant to date!

1933. Lorimer and Osborn publish *Dynamics of Population.*

1936. Dublin and Lotka publish *Length of Life.*

1941. US census of 1940 comes out according to prediction, with error less than 2/100 of 1 percent!

Observe that this ladder is full of "regularities," and that it supports not only population theory and social statistics, but also probability mathematics which is now so vital to the development of biology, physics, and natural science generally.

Ten characteristics

In trying to understand these questions I have read a great many definitions of the scientific method, but most of them seem incomplete. The most satisfactory are perhaps Morris R. Cohen's in his *Logic and Scientific Method*, and J. R. Oppenheimer's in

the *Technology Review*, February, 1948. So in my amateur way I have sought to combine them by writing out the characteristics of every definition or description encountered. After the duplications are crossed out, ten characteristics seem to remain, a kind of matrix of the scientific method. This is the closest I can get, in words, to an explanation of what science means.

1. Most important of all is the fact that human emotions are thrown out of scientific work. Alone among man's disciplines science can resolve problems independently of our desires and wills. We may desire to find an answer to a question, as Newton did, but when the real work begins the emotional bias must go out. Scientific method is systematic doubt. It does not doubt everything, only what cannot be proved. For determining proof there is a rigorous procedure, first laid down by Pythagoras.

2. A scientist usually begins with a problem to be solved. The problem must be stated in terms which admit an answer in the space-time world. Only people with nothing better to do study facts just to study facts; they usually end up on quiz programs. Somebody must be uneasy, under tension, because he does not know the answer to something he feels to be important. Maybe it is an urgent problem, like beating the Germans to a chain reaction; maybe it is more leisurely, like the probable population of the United States in 1970.

3. The evidence already available is usually explored and classified, perhaps some calculations are made, and the student arrives at a theory, a *hypothesis*, which may answer the problem which has plagued him. At this point the philosopher and the scientist often part company. The philosopher is inclined to believe that his hypothesis is the answer because it sounds so reasonable. The scientist expects the worst. The whole point of science, says Oppenheimer, is to invite the detection of error and welcome it.

4. Following the hypothesis, experiments and observations must be made to prove or disprove it. Often dis-proof is helpful because it narrows the field. Surrounding the scientist should be a *community* in close and accurate communication, dealing in similar concepts, and capable of rapidly checking his work for errors in experiment or logical consistency. These corrections are registered chiefly through scientific papers in the journals.

5. If the experiments indicate a high probability for the hy-

pothesis, then the world has an addition to knowledge. It goes into the storehouse for permanent reference. Prediction becomes possible in similar situations. We have something to rely on, something beyond debate. All competent observers can agree that $E=MC^2$, or that the reproductive index governs population growth. At the stage of unproved hypothesis, scientists can argue like an old-time Socialist local, but when the experimental proof comes in they must cease their clamor. Sometimes a group of verified hypotheses can be combined into a great general law—like thermodynamics or gravitation. Scientists are always pleased when they can make their conclusions more general.

An illustration of the ending of debate is found in the development of the atom. After the discovery of the nucleus and surrounding electrons early in the twentieth century, it was found that the positive and negative electric charges inside the atom did not balance out. For twenty years physicists argued about how an electron can be inside the nucleus and why the charges do not annihilate each other. Then Chadwick discovered the *neutron* in 1933. At once the electrical accounts balanced satisfactorily, and the argument was silenced.

6. The scientific method demands that when facts are compared, they must be of the same order. Do not add cabbages to electrons and expect to get a total which means anything.

7. Science is dynamic and self-correcting. A vigilant community is always watching. It has ceased to search for absolutes, and now intends to concentrate on processes. Further experiments may increase or decrease the probability of a given "law," and if they do the law must be restated. Then more experiments are required to nail down the restatement for the storehouse—and so endlessly onward. At each advance, probability is increased, and a closer fit with nature made. No scientist expects an absolute fit; he leaves that to the metaphysicians.

When Kurt Lewin, the psychologist, died in 1947, the *Lancet* paid him a tribute for, among other fine accomplishments, the distinction he drew between Aristotle and Galileo. Aristotle was concerned with the *properties* of stones; Galileo, on the contrary, concerned himself with the *relations* of stones to the environment.

8. There are no self-evident propositions in science.

9. The logic of consistency is extensively used but the final

appeal is to experiment or observation on the nonverbal level. An argument may answer a philosopher; it will never answer an experiment. An experiment can be answered only by a more careful experiment.

10. To doctor an experiment, to slant a conclusion, to report anything but the whole truth as one knows it alone in the night, brings ignominy and oblivion. There can be no secret processes, no patent medicines, no private understandings, no payoffs on the side. The calculations must be laid on the table, face up, for all the world to see. In this sense science is the most "moral" of all man's disciplines. The gravest defect in the Manhattan project, and the reason for the publication of the Smyth report immediately after Hiroshima, lay here. Scientists had to break their moral code and many of them bitterly resented it. Science will be corrupted if ever its direction falls permanently into the hands of nationalists and ideologists. It is as international as the north wind.

The operational definition

P. W. Bridgman, Nobel prize winner, says in *The Logic of Modern Physics* that Einstein revolutionized not only Newtonian physics, but the mental processes of scientists. He demolished time, space, mass, as absolutes, forcing scientists to find their concepts in what they did with their hands rather than what they said with their mouths. No operation with meter sticks, clocks, or other instruments can be performed which isolates "time" as an entity. Always "space" gets in. Measuring time with clocks involves measuring it at some *place*. As no operation can be performed to isolate it, Absolute Time in the Newtonian sense becomes meaningless. Philosophers can play with it, but if you are stationed on the front line of physics you must think in terms of space-time—which corresponds to the reality out there beyond our heads.

Dr. Bridgman swings this powerful searchlight on social scientists. Like physicists, they will have to perform operations, point to dynamic human behavior, forsake their commerce in abstractions without referents if they are to create meaningful concepts. He challenges social scientists to use the operational method to define such terms as "freedom," "determinism," "rights," "property," "the state," "justice." Here, he says, is the only possible

road to fruitful knowledge, in the human sciences as in the natural.

At this point we should emphasize again that while physics and chemistry rely most heavily on laboratory work and exact measurement, biology, geology, medicine depend even more on observation, comparison, logical consistency. Darwin's great laws of evolution were not laboratory creations but logic applied to careful observation. Some areas in social science can be made quantitatively more exact than large areas in biology or medicine.

Two billion potential scientists

Bridgman and Oppenheimer with their great honors are up there on the mountain. How can we men of the foothills and the plain comprehend them? We cannot comprehend them completely unless we take the vows and join their close-knit community. But there are at least three reasons why we can come closer than has been the case, and abandon altogether the idea that a scientist is a victim of midnight seizures.

To begin with, all of us from Einstein down are members of the human race, with similar physiological equipment. There is reason to suppose that we have about the same number of potential connections in our brains. If scientists play on these connections to a somewhat different tune, others conceivably could learn to do so. Furthermore, top scientists when they leave their chosen mountain and make judgments about other matters, such as life and morals and the hereafter, can sound just as foolish as anybody else.

Secondly, in every one of us there is that ceaseless "quest for certainty" which John Dewey talks about. We are all at least embryo or tadpole scientists in wanting explanations for things which puzzle and perplex us. The folkways, of course, provide many explanatory theories to order: "It rained because the moon was full." Individuals, however, gather up stray items of experience and formulate their own theories: "The car is knocking because that last filling-station must have sold us some low-grade, watered gasoline." The scientist states his hypotheses much more carefully, and then verifies them with controlled experiments or more observation. The rest of us usually abandon them in the raw hypothesis stage.

Finally, many people are constantly carrying on little controlled

experiments without being aware that they are, for the moment, scientists. You plant half the peas an inch deep and the rest two inches deep, and see which makes the better crop. You try this fertilizer against that. You switch on an electric light and no light comes. "Burned out," you generalize. But often before throwing the bulb away, you screw it into another socket where a working bulb has proved the current to be on. This simple action is a controlled experiment, and a fairly rigorous one.

The germs of the scientific method are in all classes and conditions of men, especially those who work with their hands. There need not be the world of the scientist sealed off from the world of the layman if we really want to get together and establish better lines of communication. A little research by social scientists could disclose the proper methods. Every day that passes makes it more necessary that the two worlds meet.

I have tried to set forth some of the major characteristics of the scientific method. We turn now to an interesting example of its application in the field of human relations.

CHAPTER 3

How to Design a Pilot

IN WORLD WAR I most airplane pilots for the Allies were selected on the basis of courage. After many terrible accidents the generals began to wonder if all courageous men were equally endowed with ability to stay up in the air. A crude screening process was established toward the close of the conflict. As World War II approached, not much progress had been made above this benchmark. Some educational tests had been introduced but little more.

In 1941, President Roosevelt called for 60,000 planes. Despite skepticism in high quarters he got 300,000 planes before the shooting was over. Who was going to fly them? With the threat of war on two fronts a fantastic demand arose for pilots, navigators, bombardiers, ground crews. There were not enough college undergraduates in the whole country to meet the need, even if every one of them had been a potential ace. A screening process was necessary at once to handle not hundreds, but hundreds of thousands of young men. As the planes came off the assembly lines in Detroit and Seattle, pilots must come off the assembly lines at the training fields.

Scientists were put to work designing planes, and social scientists were put to work designing pilots. In 1941 the Aviation Psychology Program of the Army Air Forces was organized with the dual purpose of finding out the human characteristics which make a young man a good flyer, and constructing a series of psychological tests to recognize such young men as they applied.

Here was a challenge in aptitude testing beyond anything ever attempted before.

John C. Flanagan, psychologist for the testing service of the American Council of Education, was given a commission and put in charge of the program. From the first he had excellent co-operation from the generals in the AAF. He began at once to recruit assistants from the universities, and from the personnel departments of large corporations. By V-E Day he had more than a thousand people on his staff.

It was soon discovered that the various IQ tests developed over the past thirty years were not much help in picking pilots. They measured scholastic aptitudes rather than ability to come out of a nose dive. It was found that the standard rule of ten qualifying traits for a job was too limited. Some twenty traits were required to select a man who could pilot a plane in combat. It was found that a bad pilot might make a good navigator, and that a man who did well at one type of gun might do badly at another type.

The ability to reason, a wide and fluent vocabulary, skill in handling mathematical concepts, are fine for success in academic work but practically useless for pilots or for bombardiers. Such abilities, however, help navigators. Probably the most significant advance made during the whole program was the development of tests which measured ability to fly rather than ability in a classroom. We might call them psychosomatic tests, as they deal with the whole organism, body and mind.

The first screening

Here we are, then, with thousands of youngsters clamoring to battle the Luftwaffe in the skies and a team of scientists trying to determine which of them are competent to do so. First of all, the experts set up a paper and pencil test, based on all that can be gathered from past experience in this field. Simultaneously, they set up a procedure to test the test, making it self-corrective so that the initial screening constantly improves.

Altogether, more than a million young men took this pencil and paper test, and 650,000 passed it. How good was it? A controlled experiment was devised to get an answer. One thousand men were allowed to take the preliminary course for pilot training whether they had passed or not. Those who had passed did considerably

better in the air than those who had failed. The preliminary screening of a million men had eliminated a lot of square pegs.

But not enough square pegs were identified by the method. Many still slipped through. To devise a really formidable barrier one group of psychologists and technicians was assigned to concentrate on theory, research, and instrument making. Eventually, they produced a test "battery" composed of two distinct parts.

The battery

A young man facing this battery first sits down with scores of his fellows to answer a far more searching pencil and paper test. This finished, he goes into a room full of strange mechanisms. The candidates sit in rows, each facing an instrument panel where he manipulates complicated gadgets. At the end of the row is a trained technician in charge of the experiment. He, too, manipulates gadgets, in this case various ingenious recording devices to score the candidates.

The battery measures such things as speed of perception, mechanical comprehension, ability to read dials, mathematical reasoning, and so on. After some pretty complicated statistical operations upon the record made by each man, pilot candidates are separated from navigators and both from bombardiers. Each occupational group is then graded into nine "stanines," or classes, based on predicted ability in the air.

Checking the predictions

How good were the predictions? More controlled experiments were arranged to find out. Take the pilots, for instance. When men from all nine "stanine" classes were given primary field training only four percent from the top stanine failed to make the grade, compared with 77 percent in the lowest stanine who failed! Similar clean-cut results showed up for navigators and bombardiers. This seemed to indicate that the predictions were very good indeed.

Presently no candidate was allowed to train on the field for these positions unless he had made one of the three highest stanines. Those below Stanine 7 for all the aircrew officer positions were put into training for ground officers, gunners, mechanics, radio operators. Exceptions, of course, were the guinea pigs who were

constantly being filtered through in small lots for the purpose of controlled experiments.

The test battery was continually improved as aptitudes were more sharply defined. Battery scores were compared repeatedly with actual training records in the air. The good techniques were retained, the poor ones discarded. One controlled group of 1,000 pilot candidates came up with these results:

	Eliminated in field training
No screen at all	75 percent
Prewar Army screening	61
Battery, 1944 model (three upper stanines)	36

Consider the enormous saving in men, equipment, and money reflected in these figures! Think of the terrible crackups avoided, the combat defeats turned into victories. It was found that pilots placed high by the battery had the best combat records.

Successful pilots were found to be quick in reactions, well co-ordinated, with high discrimination between visual objects and high visualization of mechanical movements, well educated and *keen about flying*. The best pilots were in the 18–20 age group, and married. The worst were typically 26 or over, single, and with only grade-school education. Pilots in the lowest stanine, it was found, had *more than twice the accident rate* of those in the highest. Education was clearly a factor, but only one of many.

How psychologists make aptitude tests

Neal E. Miller of Yale has summarized for me the steps psychologists take in building up a testing battery like this one for selecting pilots. Four distinct stages are involved.

First, analyzing the job. In doing this the psychologists pay particular attention to the critical requirements, the causes of accidents and failures, and the human qualities which make for exceptional success. Their methods of studying the job range all the way from analyzing records and interviewing candidates, instructors, and supervisors, to taking instruction and learning the task themselves.

Second, constructing the tests. The next step is to select or construct tests which seem likely to measure the aptitudes necessary to meet those requirements. The psychologists start by drawing from the storehouse a large number of tests which have already

been made and used, so that the kind of things they measure is known. But it may also be necessary to devise new ones. Some tests look like the kind that are given in school. Others may be very different, aimed at finding out, for instance, how quickly the candidate can notice the details of a map, or how accurately he can learn to manipulate a new and complicated control mechanism.

Third, trial administration. After a number of promising tests have been selected or invented, the third step is to administer them to a representative sample of candidates who are going to be trained. The resulting scores are *not* used to select who shall go into training, but are filed away until the candidates have had a chance *to make good or fail in the field.*

Fourth, validation. After some measure of the success or failure becomes available, the final step is to compare the test scores with training scores to see if candidates who earned higher marks on the tests were those more likely to succeed in the field. Tests which prove their ability to predict are kept, and those which do not are discarded. In the Air Forces program several hundred tests were tried out and only the best twenty or so were used in the final battery.

If a test is composed of a number of parts, each part is tested separately, and the best items are kept while the poorer ones are dropped. In addition to determining how well each test predicts success or failure, there is a way of showing how much each test overlaps with the others. The best is one which measures something that is not already measured by the other tests, and also is related to success and failure. The statistical techniques for measuring and combining these factors to determine which group of tests is the most reliable, are called the "correlation coefficient," and the "multiple-regression equation."

Many other technical devices are involved but the main idea is simple: study the job, make up experimental tests, try them out, and keep those which can predict the success or failure of the candidate.

Group psychology

Flanagan's social scientists did not confine themselves to the laboratory and the training field. Some of them went right into

combat zones to continue their studies of predictability, and also to investigate tensions in combat flyers.

One team made a special study during the winter of 1943-44 of the 8th, 9th, 12th, and 15th Air Forces in the European theatre. Losses were high over Hitler's Fortress Europa, five percent per bombing mission. After twenty-five missions, only 277 men out of 1,000 were left. A flyer had one chance in four, yet morale was good. Why? The psychologists found that good leadership was certainly one reason, but another was even more important: the sense of being *a member of a group in which flying and fighting were the only accepted ways of behaving.*

Flyers lived together, played together, fought together in four squadron units, and had little contact with outsiders. The individual came to identify himself very closely with his group as a kind of extension of his ego. He took great pride in his outfit and was ready to beat the ears off anybody who criticized it. He also wanted to be constantly reminded that it was doing an important job superior to other outfits. A major task of group commanders was to assure their men that this was so.

Another technique to raise morale was to encourage flyers to *talk it out* after a harrowing experience over Berlin. Leaders were advised by the psychologists to get every detail out in the open, not to let the boys bottle it up inside.

The relationship with the *group* was fundamental in the combat zone. Indeed, a kind of hierarchy of groups was identified. First, the flyer valued the *crew* of his own bomber; they were closest and best. Then the *squadron* with which one's plane fought; then the *group of four squadrons* under a full colonel; then the *wing* under a brigadier general; then the *Air Force*—the 9th or the 15th, or whatever. All these outfits produced strong comradely feelings. The feeling for the US Army was less strong, for the Allied armies still less so. Loyalty to the peoples of the United Nations was barely measurable.

If a boy would identify himself with his immediate face-to-face group—crew, squadron, wing—the record showed he was a much better fighter than if his loyalty was ideological, expressed in such slogans as "fighting for freedom," or fighting "a war for democracy." People meant much more to the fighters than ideas.

Three kinds of fear were identified: injury to oneself, injury

to one's crew-mates, fear of failing in one's duty. If the results obtained by one's squadron were believed to be poor (whether they actually were or not), fear *increased*. The individual must be encouraged to think that his death, if it comes, will be worth while. Morale was helped by a definite goal: so many missions completed and then home! It was helped by confidence in equipment—"the B-17 is the best God-damned ship ever built!"

The psychologists found that morale was hurt by stories of slackers back home, or strikers in war plants. It was hurt by lack of trust in commanding officers, by stories about returned flyers with combat experience who were not used to train recruits on US fields. Questionnaires showed that 85 percent of the flyers were afraid on their first mission, 40 percent were afraid on all missions; only one percent said they were never afraid. We begin to see why courage alone was an inadequate standard for selecting pilots in World War I.

How many casualties were saved by this project? Your guess is as good as mine—the Army Air Force makes no guesses. I suspect the figures must run into the tens of thousands. It is hard to name a more urgent and more useful piece of scientific war work. There will be several volumes in the forthcoming report on the Aviation Psychology Program. They will document a storehouse of dependable knowledge which will prove very useful in the years ahead.

Lessons for peacetime

Working with thousands of young men in large statistical groups the Air Forces psychologists found out many things about the learning process. One of the most serious difficulties in training pilots and airmen generally was "having individuals learn the wrong things," and thus throw away their time—to say nothing of the taxpayers' money.

The trouble with regular school education, Flanagan believes, is that the individual is trained for the next course rather than for life. The program has thus an important lesson to contribute to educational guidance. There should be a careful job analysis made of various well-marked adult activities—professional, executive, civic. Next, a set of preliminary critical requirements should be

worked out—as in the program—which a boy (or girl) must have to enter one of these careers. Then a battery of aptitude tests should be prepared to see if he has what it takes; all to be subject to controlled experiment and mathematical correlation.

Youngsters who today cannot pass the Seashore tests do not go in for musical careers. They may be tone deaf or in other ways handicapped. They lack what it takes to be successful in music. Flanagan proposes to use the Air Forces program as a base for an exciting extension of this idea to *all* the major professions. It would save a mountain of economic waste and human frustration.

The Navy also had its psychological program for picking airmen under the direction of the late John G. Jenkins. It, too, saved many battles in the air and many lives, though the margin of error in prediction, Dr. Jenkins confessed to me with disarming frankness, was a little higher than in the Army. Among the lessons for peace was the development of what is called the "nominating technique" for finding natural leaders. It was worked out for the selection of squadron commanders, but might be equally applicable to factory managers. Aptitude testing for wage earners is well along, but for the $12,000-a-year-and-up executive, appearance, intuition, the right prep school are still the chief criteria.

Jenkins and four other psychologists were finally permitted to go aboard carriers in combat zones to check on the battery tests made at training camps. They also carried on two- to three-hour structured interviews with some 2,500 Navy pilots on the question: "If you were going into a new air group tomorrow, what two men would you most like to fly wing with? What two men would you least like?"

Out of this nomination by the men themselves came startling results. Some squadron commanders were never nominated at all; they had no followers. Some officers far down the line of seniority had very high nominations. The top echelons were enthusiastic about this study despite the upsets in time-honored traditions. After all, the high command desperately needed fighting leaders and this proved to be the best method they had ever seen for detecting them. A leader is one who already has followers developed through the informal organizations to be found in every human group of any size. (A factory is alive with them, as we shall see later.) The nominating technique discovered natural leaders with a high degree of accuracy.

But is it science?

At this point let us ask a question of those senators who were considering the National Science Foundation bill on that summer day in 1946. Just how does the Army (or Navy) Air Forces Aviation Psychology Program differ in approach from a large-scale project in the natural sciences? Where is the "individual or group telling another group how they should live"—which Senator Fulbright gave as one idea of social science? Where are the "various kinds of ideology," specified by Senator Hart? Where is the "impossibility of applying science to the study of man," which worried Dr. Potter?

It is true that this program cost fewer dollars, was on a smaller scale, and had less spectacular outcome than the Manhattan project. On the other hand it was a far larger and more ambitious undertaking than Galileo's Leaning Tower experiments, or Torricelli's pan of mercury.

Turning back to the ten characteristics of the scientific method given in the preceding chapter, where did Flanagan and his associates neglect any one of them? They refused to be influenced by personal emotions, they checked their hypotheses with a constant stream of controlled experiments. When a theory failed to stand the test of experiment, it was abandoned. They had no traffic with self-evident propositions; made no appeals to authority or to the eternal verities, while the logic of consistency was employed throughout. All the facts are now being spread on the record in great detail for the world to see, and to repeat the experiments if the world cares to.

If it is objected that "real" science uses more mathematics and more laboratory apparatus, a run through the eighteen thick reports will answer the objection. They describe instruments by the score, some of them exceedingly complicated. Many pages are covered with intricate mathematical calculations including a vigorous use of probability theory.

Three differences

As against the Manhattan project there were, however, three important differences.

First, there was less dependable knowledge in the storehouse for the social scientists to draw on. Psychology has no unbroken

line going back to Galileo. These scientists began by rounding up data from World War I, most of which turned out to be useless—though one good instrument test was resurrected for the battery. They continued with an investigation of Army tests from the twenties and thirties which were also largely useless. They then gathered what was known about IQ tests only to find they did not fit requirements. Data on aptitude testing before 1941 was helpful but in severely qualified ways. Some laws and conclusions in social psychology and anthropology were available and very helpful. Reading the record, however, one cannot fail to notice the limited scientific background, and how the group had to create new theory, forge new tools and techniques, as they went along. But observe: *the next man can stand on their shoulders.*

Second, we note that successful prediction was not so high as in the investigation of the atom. If 1,000 boys passed the battery in the highest class it did not follow that 100 percent made good flyers. A small percentage of those in the lowest class meanwhile *did* become good flyers. This qualification has nothing to do with the scientific method. It only shows a somewhat larger margin of error.

Third, we miss the names of outstanding authorities and Nobel prize winners. The natural sciences still have more prestige.

Waiting for a Newton

To return for a moment to the question of prediction: should a wider margin of error in the social field discourage scientists? No. A century ago, medicine was emerging from the stage of alchemy and the laying on of hands. Doctors depended more on authority and argument than on careful observation. Not until they had invented useful *instruments* to measure symptoms—clinical thermometers, stethoscopes, microscopes—not until they watched their patients more and argued less, did medical scientists move forward. Medicine even now cannot predict as accurately as physics and astronomy. We all have acquaintances who enjoy boasting how "the doctors gave me six months to live five years ago, and look at me now!" Medicine, too, deals with man and his variables, yet it is universally included with the natural sciences.

The latter may be better in prediction but the difference is in degree, not in kind. Dr. Mark May, of the Institute of Human

Relations at Yale, draws an interesting parallel. Referring back to the Kepler story, he says that in social science we have a great deal of first-rate observation like that of Tycho Brahe, who recorded, you remember, the movements of the planets. We have some good deductions from the observations, such as distinguished Kepler's work. The reproductive index in the study of population growth is an example. But we have no Newton yet to give us great summary laws, let alone an Einstein to refine the summaries.

But there is no particular reason why not. Maybe there is a Newton at this very moment in one of the graduate schools—Chicago, Yale, California. And an Einstein somewhere in a nursery school, say in Topeka, one of those alarming infants with an IQ near the boiling point whom only the Menningers can cope with.

You may wonder why I have told the story of combat pilots here. The reason is this: I found that I was unable to organize this book, let alone write it, until I had an important case in which the scientific method was extensively used in human relations, and had it crystal clear in my mind. I needed a firm point of triangulation before I could go on with the survey. Because the reader may share this feeling I introduce the firm point right here. We will now proceed to more general considerations, returning later to specific examples.

CHAPTER 4

Varieties of Social Science

ALTHOUGH there has been no Newton yet in social science, a number of figures nevertheless stand out, together with some who thought they were Newtons—Ricardo, for instance, and Herbert Spencer. The great names include Plato, Machiavelli, Locke, Comte, Tom Paine, Malthus, John Stuart Mill, Jeremy Bentham, Adam Smith, and many more.

These men were as distinguished as any natural scientist and far better known to the general public. However, they were not scientists as defined in Chapter 2, at least not for most of the time. Rather they were political or social philosophers—and there is quite a difference. Philosophical systems and speculations do not require an expedition by the Royal Society to prove them. Sometimes, to be sure, the speculations are full of wisdom, and even stand up against the battering of history. But the mental approach is less humble. Where the scientist accepts the facts, the philosopher often succeeds in ignoring them. Let us examine Karl Marx as an example of the distinction.

Was Marx a scientist?

The founder of "scientific" socialism is regarded by millions as a Newton in the field of economics. He is supposed to have discovered the laws which govern human societies as the law of gravitation governs the movements of the planets. Marx's adherents talk about economic determinism, and grow very impatient with people who doubt if matters are quite so inevitable.

Marx and his collaborator, Friedrich Engels, were not so much

filled with curiosity about human society as they were filled with fury against the capitalists. This was an unfortunate beginning. It contradicted the first principle of the scientific method by letting in personal emotion. They wanted socialism as intensely as Saint-Simon, Fourier, or Robert Owen, but they had fewer illusions. Forty years of so-called utopianism had convinced Marx and Engels of the futility of preparing rational blueprints for the good society and then trying to argue them into acceptance. They were looking for stronger medicine.

Casting about the social structure they presently discovered a number of facts, such as the uprising of discontented workers in Lyons in 1831, and the Chartist agitation in England, which seemed to be strung on a single theme, *the class struggle*. They evolved a hypothesis about the class struggle—which was quite legitimate scientifically—and went to the history books to find out about class struggles in the past.

"Then it was seen," said Engels, "that all past history, with the exception of its primitive stages, was the history of class struggles." Great excitement prevailed as this "law" emerged from the researches in the British Museum. Not content with locating a dynamic group—the proletariat—who would automatically bring socialism, Marx went on to elaborate the conclusion by sweeping generalizations which covered all history, and which were difficult, if not impossible, to verify. We must also remember that the volumes of history on the shelves of the British Museum from which he drew his conclusions left something to be desired a hundred years ago. Historical research has been revolutionized since 1850.

In due time the anthropologists came along with their patient observations of how men actually behaved in a given society. They found little to support the "law" of the class struggle. Says Linton, for instance, in *The Study of Man*:

> The class struggle is a special phenomenon which developed in only a few societies, and then as a result of a complex series of factors, the most important of which has been rapid cultural change. Most of the world's societies have not even been class-organized, and in those which were so prior to the sudden rise of machine industry, the classes . . . reached a condition of satisfactory adjustment.

Here is a flat contradiction of evidence. But as between Marx

and the anthropologists, any competent scientist will choose the anthropologists. Linton in his book is not indulging in personal opinions or grievances but summarizing accredited knowledge in this field. Anthropologists have agreed that the typical human society, except in periods of very rapid change, comes to rest with nearly every individual in it enjoying a definite *status*. The normal individual, moreover, takes pride in his status, and does not dream of revolting against it.

Social science$_1$ and social science$_2$

If Marx was not a social scientist, what was he? He certainly was an economic theorist, and by common acclaim one of the greatest of them. Economists are social scientists by definition—which brings us to a full stop. How can we have a scientist who is not a scientist? We can do it by expanding the referents for the term "science." Few words have one exact definition; meaning shifts with the context. Scientist$_1$ can refer to a person who practices the scientific method as set forth in Chapter 2; scientist$_2$ can refer to a person who likes to think seriously about human problems. The former attempts to add verifiable knowledge to the storehouse; the latter is content to *speculate* about human relations, frame hypotheses from time to time, but leave the proof to others. On this construction, Dr. Flanagan is a social scientist$_1$, and Marx is a social scientist$_2$.

W. F. Ogburn observes that a good deal of social science has not even reached the hypothesis stage, because no clear-cut theory has been formulated. This we might call social science$_3$. In Los Angeles the term "scientist" commonly refers to a Christian Scientist. "Science" is a roomy term. "The scientific method" however is more specific.

Much of the material classified as "social science" in the universities and the textbooks has not been arrived at by the scientific method. Its exponents have not cut loose from the older problem-solving methods of intuition, authority, and pure logic. The Royal Society has sent out no expeditions. The material may be interesting, stimulating, and educational in the scholastic sense, but it is not conclusive.

Did Plato mean this in the *Republic* or did he mean that? Did Machiavelli foreshadow Hitler? Did Spengler originate a fresh

philosophy or was it the same old stuff? Is Toynbee writing history or theology? Is the capitalist system mature? Listening to this constant buzz soaring up the ventilators of practically any department of social science, one suddenly realizes that the senators had a reason for being confused. They had not analyzed the social disciplines to find the distinction between the scientific method and mere speculation. If they had done so, they might have been willing to subsidize projects like selecting pilots, but not *The Decline of the West,* or *Das Kapital.*

Delinquency as a test case

Let us take another case to set beside that of Marx. Suppose juvenile delinquency is a serious problem in your community. You are put on a committee to look into the causes. First, let us say, you try speculative methods. This means having a lot of meetings, thinking hard, and arguing. It means looking up what the good books say about bad boys. Some of the books say to reason with them, some say to punish them, some of the more recent say to give them playgrounds, or get them out of the slums. Doubtless in all this welter of advice, going clear back to Plato's *Republic,* you will find many stimulating ideas.

But another approach would be for your committee to consult experts who really use the scientific method. Here, for instance, is what a team actually did a dozen years ago.[1] Delinquent boys and girls were paired with nondelinquents from the same families—143 pairs altogether. They came from three cities. All were given a most searching examination, physical and mental, with IQ tests and psychiatric interviews. Their records were exhaustively studied.

No proof was found of inheritance as a prime cause of delinquency, of illiteracy, of slum upbringing, or of most of the other alleged causes. Nineteen of the cases came from well-to-do homes. *But in every case* an emotional maladjustment was found. Often it had its roots in the way the parents felt about the child. If they loved him and made him feel secure, the chances for delinquency were found to be small, no matter how poor the family. If parents did not provide that emotional security so essential to

[1] Healy, Bronner, and others. *New Light on Delinquency and Its Treatment.* Yale University Press, 1936.

every small child, he might be robbing candy stands by the time he was eight.

Leonard Doob, the Yale psychologist, in commenting on this study, said that it rendered obsolete four-fifths of all previous literature on delinquency. It put something definitive into the storehouse. It provides a useful point of departure for your committee, and for every serious attempt to do something about juvenile delinquency.

Unverified hypotheses

It is of great importance, it seems to me, to grasp the distinction between these two wings of social science. Far out on one side are the personal speculations of great men like Aristotle, Hobbes, Marx—and others not so great. Nobody knows whether what they say is true or not. Far out on the other side are the plodding note-takers in clinic, Congo village, and laboratory, putting down what they see and hear. They are accumulating a solid core of truths. In the middle is a zone where men with imagination may be using the scientific method part of the time, and letting their imaginations roam the rest of the time. Perhaps William James was such a man.

There is no call to become severely critical because a good deal of social science is not rigorously scientific. We simply recognize that the speculative wing, social science$_2$, has not gone beyond the hypothesis stage, adequate proof has not come in, debate and argument are still wide open.

Criticism can be legitimately leveled only when solid validity is claimed for interesting speculations. But the alert reader is in possession of a test for validity: Has argument among the experts died down, indicating acceptance of the hypothesis, or is debate still hot and inconclusive? Debate resounds concerning dialectical materialism, but on juvenile delinquency it is dying down.

Another test is suggested by Dr. Oppenheimer. Above all, he says, science gives us the means to detect error; it is continually self-correcting.

> In fact one of the features which must arouse our suspicion of the dogmas some of Freud's followers have built up on the initial brilliant work of Freud, is the tendency toward a *self-sealing system* . . . which has a way of almost automatically discounting evidence which might

bear adversely on the doctrine. The whole point of science is just the opposite. . . . Some may think that in another field a comparable system has been developed by the recent followers of Marx.

Freud, as a medical man turned psychologist, stands in the borderland between natural and social science, and a wide zone it is. But Dr. Oppenheimer has presented us with a valuable term —"self-sealing system." Social science broadly defined as it must still be, has its share of self-sealers, guarding the "true doctrine" from any further objective investigation. When we find students so engaged, and probably a little emotional about it as well, we may be sure that we are in the presence of something less than the scientific method.

Mr. Burnham and Mr. Spencer

James Burnham is a political scientist very much in the public eye for his lively books. In 1941 he wrote *The Managerial Revolution*, which developed the provocative thesis that managers, rather than owners or workers, were in the process of becoming the dominant class in modern society. He produced enough facts to warrant a hypothesis. In the course of evolving it, however, he unfortunately made certain flat predictions. Surveying the managerial class in Germany, he said that victory for the Axis in World War II was inevitable. But he was wrong. He said that three superstates would dominate the world after the war— Germany, Japan, and the USA. We can mark him 33 percent correct here. He said that Russia would split in two between Germany and Japan. Wrong again. He said that 1940 would probably mark the last election in the United States, "at most, the next to the last." It looks as though he would be counted out on this one too.

The late Morris R. Cohen gives another example of social science$_2$. Because different peoples have different histories it is dangerous, he says, to compare the institutions of one with another. To get around this difficulty, men like Comte and Herbert Spencer resorted to the arbitrary hypothesis that all peoples must go through the same stages in their history, and declared it legitimate to compare different peoples at the same stage. There is no support in anthropology or history for this. The Peruvians, for instance, cannot have passed through the hypothetical sequence

of nomad, pastoral, and agricultural stages because they never had enough cattle to be a pastoral people. The boys apparently invented tribal customs to fit their theories. (They would hardly dare do it now, with the Cross-Cultural Index to check them.)

What it seems to come down to is this: All of us have a right to speculate about human relations and write books if we care to. But we should not publish such books without making it clear where we are offering *an unverified hypothesis*. Looking back over the years, it may be that a book or two of mine should have carried that warning.

Ivory towers

While we are in a critical mood it might be useful to mention some other difficulties in the speculative wing of social science.

Colin Clark, in the introduction to his classic study *The Conditions of Economic Progress*, bids farewell to his academic colleagues in London. He likes them all personally, he says, but is dismayed at their continual preference for the theoretical rather than the scientific approach to economic problems. Not one in a hundred, he says, least of all those who are most anxious to proclaim the scientific nature of economics, really understands what constitutes the scientific approach, which he defines as:

1. The careful systematization of all observed facts.
2. The framing of hypotheses from them.
3. The prediction of fresh conclusions on the bases of these hypotheses, and
4. Testing the conclusions against further observed facts.

It is ironic, he says, to see the stream of books trying to solve exceptionally complex economic problems by logic and argument, often with hardly a reference to the facts. Worse still is the practice of basing a book upon theoretical arguments and then *selecting* a few hand-picked facts to illustrate conclusions already reached. This neatly puts the theoretical cart before the factual horse.

There may be room, he thinks, for two or three great economic theorists in a generation, but not more. The rest can only lay stone on stone via the hard scientific discipline, rigorously rejecting all theories which cannot be verified. (We shall return to Professor Clark's demurrer later.)

University schedules unfortunately are not easily adjusted to

permit firsthand observation by social science students. They rarely take their notebooks to Congress during a heated session, to a dock strike in New York, to a revolution in Paraguay. Beardsley Ruml says that such a program would be expensive, but that a greater difficulty is the enormous amount of trouble it would entail. The social disciplines until recently have tended to be highly intellectual, bookish, and remote. The best students have been those who could deal brilliantly with abstract logic, and correctly manipulate the verbal symbols.

Professors have tended to sit in chairs writing books about each other's books. Students have sat in somewhat harder chairs, writing monographs about the theories of men dead and gone these two hundred years. Mr. Ruml believes that as the science of man advances the really good students will be found not among the chair-bound scholars, but among boys and girls who like people, like to talk to them and interview them, and are curious about human relationships. They will study living society more than they study the great books.

Elton Mayo adds his testimony to that of Mr. Ruml and Professor Clark. After a quarter of a century of university work he notes sadly how social science students are trained to argue and to cite authority, but not to handle concrete situations involving human relations. They are a little like the man who took a correspondence course in aviation. He knew all about flying but he couldn't fly. The university men often arrive at top generalizations without doing the necessary spade work in field and clinic.

Dr. Mayo demonstrated in his experiments at the Hawthorne plant (see Chapter 13) that scientific conclusions can be drawn through clinical as well as laboratory methods. He advises the universities to teach social skills which can be used to meet specific problems. Many of Mayo's students are now using the techniques he taught them at the Harvard Business School to solve labor-management problems in factories and offices all over the country.

Sweeping the detritus

George Lundberg observes that sociology is the only science in which a leader of a century ago would still find himself very much at home. This may be unfair to the economists. Who would be more at home than Ricardo in the London School of Economics today? By way of contrast, picture Newton standing

beside a cyclotron at Los Alamos—with the great body of atomic theory, relativity, and quantum mechanics to master before he could know what the cyclotron was doing. He would master it, but not in a day.

Down in the TVA there was a man (who just recently retired) with a vivid metaphor for this lag. Harcourt Morgan points out that economic and political theories about human societies were formulated by the Greeks and other ancients long before the physical world was systematically investigated by scientists. The study of human societies in university courses is still full of these venerable guesses, wild or informed as the case may be. It now becomes the task of the social scientists, says Dr. Morgan, "to sweep out the detritus of dead ideologies from Aristotle to Marx and start afresh, dovetailing the discovered provisions and prohibitions of Nature with the powers and potentialities of modern man."

Gobbledygook as science

Without disclosing the source, for that would be unkind, let us quote a paragraph from a distinguished social scientist, written not a hundred years ago:

> In conformity with the preceding point, if all the interacting parties (in marriage, in minority-majority groups, in different occupational, religious, political, economic, racial, ethnic and other interacting groups and persons) view the given overtly similar (or dissimilar) traits: A, B, C, D, N (physical, biological, mental, socio-cultural) as negligible values or as no values at all, as comprising even no similarity (or dissimilarity), such overt similarities-dissimilarities are innocuous in the generation of either solidarity or antagonism.

There are probably not ten men in America who can translate this, if indeed it is translatable at all. The author has lost touch with his fellow creatures in a haze of verbal technicalities. The uninitiated are frequently impressed with such monstrous semantic architecture. It puts me in mind of F. C. S. Schiller's famous line that nothing has a greater hold on the human mind than nonsense fortified with technicalities. Some professors seem to feel that if they can only get a terminology which is dense enough, they have somehow achieved the scientific method. All they have really done is shatter the communication line.

For a professor to reason: Einstein is unintelligible; I am unintelligible; therefore I am Einstein—is a kind of false identification not altogether unknown. At the same time we must not forget that projects like the testing of pilots require a number of technical terms, just as natural science requires them. The complaint lies against using a 64-dollar term when a ten-cent one would be clearer.

Teamwork difficulties

I have a firsthand report from a graduate student in one of our leading universities about his troubles in trying to include all the characteristics of a problem in economics. This young man is sure that all the social sciences must cooperate in an effective synthesis if we are to tackle the problems now before us with any prospect of success. But he is dismayed that so little has been done along this line by his faculty. They have for the most part been moving in the opposite direction, carrying division of labor even further. They are organized, he says, into economic theorists, economic historians, economic statisticians, monetary theorists, labor economists, and so on. Each regards his field as a vested interest, and it is trespass for a sociologist or a psychologist to cross it in pursuit of a problem. "We are like soldiers lying in isolated foxholes without means of communication . . . yet the social sciences are concerned with different aspects of the same critter—man—and the notion that we can abstract the economic or the psychological aspect of his behavior without regard to the rest, is nonsense."

This is a pointed statement of a troublesome problem to which I want to return later in the hope not so much of solving it as of clarifying some aspects that may help the experts to solve it.

Taboo

The last general difficulty that we shall mention here is quite beyond the control of the social scientists of either wing. Certain aspects of human behavior cannot be freely investigated even today. The folklore says "no," or the church says "no," or Southern congressmen say "no," or the Chamber of Commerce says "no." Studies, for instance, having to do with sex, property relations, government debt and spending, foreigners, race, must be con-

ducted with great circumspection. It used to be a kind of heresy to examine the gold standard objectively, but that day has passed. To take a good hard look at the Constitution, as Charles A. Beard once did, still demands courage. Even ten years ago Dr. Kinsey's book on the American male could probably not have been published.

The scientific method cannot tolerate taboos and restrictions, and social science is sometimes crippled accordingly. The natural sciences can be more liberal because there is more assurance that foolish hypotheses will soon be eliminated by the shock of facts. Presently somebody will come along to say, "Very interesting; let's take a look at the experiments."

In social science, foolish theories sometimes continue unchallenged for a long time. The situation is not so crippling as it was in Victorian days—when bigots tried to silence Thomas Huxley for describing evolution—but neither is it as good as the Greeks enjoyed 2,500 years ago. Their extraordinary culture permitted them to doubt everything and to investigate anything. They were not, however, very good investigators.

Despite these prohibitions, lags, and difficulties, the scientific study of man cannot be halted. The argument that man is too unpredictable to be studied objectively is now, as Donald Young has forcefully pointed out, a dead issue. Only the ignorant raise it. A living body of genuine knowledge has been created. The war has advanced it in many departments. Already it can answer some of the problems of society better than any dictator, better than any convocation of elders, better than intuition or common sense. Already thousands of competent men and women are devoting their lives and talents to advance this knowledge.

It is not necessary to learn all about man and his behavior. No worker in the natural sciences yet knows what life is, or precisely what electricity is. But he knows enough to direct some of the processes of life and of electricity; enough to stamp out yellow fever and light a thousand cities. Ralph Linton points out the even grander vision now before the social scientist: "The pioneer can only press on, sustained by the belief that somewhere in this vast territory there lies hidden the knowledge which will arm man for his greatest victory, the conquest of himself."

CHAPTER 5

Knowledge in the Storehouse

BECAUSE there is a long-honored term, "social science," it is natural to believe that out there in the world somewhere is an entity which corresponds to the term. There is no such entity out there, and we must beware of constructing one in our heads. What *is* to be found in the space-time world?

A television camera would show a number of professors lecturing to more or less bored students in more or less stuffy classrooms; experiments being performed in psychological laboratories; clinical studies in factories and offices; teams of investigators taking notes in communities like Middletown; social workers making records on their rounds and in clinics; a battery of Hollerith machines clicking away while they sort cards for social security or opinion polls; sunburned persons in pith helmets asking questions of slightly puzzled natives in New Guinea. . . . Finally, the camera would focus on shelf after shelf of books. Many of the volumes are famous; many of them contain prose as good as the advice is bad—for instance, Plato's recipe for bringing up children.

Out there in America, 145 million people scattered over 3 million square miles of plain, valley, and hillside form and re-form into numberless groups and organizations, with loyalties and sentiments clustered about each. In Newburyport, Massachusetts, a recent study showed more than 800 organizations among 17,000 people. The camera indicates the many curious methods by which Americans earn their living, or seek to mitigate the boredom of earning a living under machine age conditions.

Here then is the field of the social scientist: watching these people behave, and searching out the laws which govern that behavior. Kurt Lewin believed that the laboratory of the social scientist is living society, that observations must have a date put on them, for society is always changing, and that a small *controlled* change can be made to provide a scale for measurement and comparison.

The major disciplines

The consensus of professional opinion, as noted before, recognizes five disciplines as the hard core of social science:

(1) Cultural anthropology, (2) social psychology, (3) sociology, (4) economics, (5) political science. The order corresponds inversely with their age, for anthropology and psychology are the youngest of the disciplines, while political science is the oldest. Aristotle as the author of *Politics* might be nominated as the father of political science.

Economics, which once was called "political economy," became a formal discipline with the work of Adam Smith in the late eighteenth century. Sociology was launched in the nineteenth century with such sponsors as Durkheim, Hobhouse, Giddings, and Ward. A little later social psychology gathered impetus from William James. Cultural anthropology was born with Morgan's work on the family systems of Seneca Indians, and began to be prominent after the turn of the century. A landmark was the publication of Sumner's *Folkways* in 1906. "Physical" anthropology as a science was much older, but it dealt with the measurement of skulls, rather than with human societies.

In addition to the Big Five, various other disciplines have been offered as candidates in the course of my study. *History* receives almost as many votes as political science, but usually with a reservation. Because it deals with events which have gone into limbo, history can never hope to measure living phenomena or use the full scientific method, and must therefore remain a kind of accessory discipline. *Legal science* receives a number of votes, and so do *educational methods, social work, demography, human geography, public administration.*

There are a few scattering votes for *philosophy, comparative religion,* and *ethics* but without much conviction behind them.

These studies are now generally classed, not with social science, but with the *humanities*, where one sits in an armchair and reads the Great Books under the benign smile of Dr. Hutchins, and where scientific research has no place. The humanities are noble studies; they elevate the mind and often produce great psychological certitude, but they put little in the storehouse. The problems they solve do not stay solved.

One of my correspondents, however, is prepared to battle for the inclusion of *ethics* with social science—at least as he defines ethics. He says:

> . . . The major problems of ethics can be formulated in scientific terms: If A, then B; if you increase the police, then there will be x percent decrease in crime. . . . Many such predictions can be made and checked . . . instead of being argued about. "Ethics" as a philosophical discipline may disappear with the establishment of enough such statements predicting human behavior under a variety of conditions, but actual ethics may then be realizable. "Ethics" now is simply an area in which we don't know enough. That's why cultural anthropology is so important—it has vastly increased the number of statements about human nature that can be verified. . . . I have been giving a course "Philosophy 123: Ethics," and all I teach is cultural anthropology. I see no other way of teaching ethics that makes sense to me—in other words, it should be taught as *applied* social science.

The Big Five, anthropology, psychology, sociology, economics, and political science, stand out above the others, with the qualification that the lines between them are beginning to melt. Like railroads or steel companies the social disciplines have a tendency to merge. The Social Science Research Council is itself a kind of clearing house.

Assisting them are four tools: mathematics, statistics, logic, and semantics. Each of these tools is a formidable discipline in its own right; each is useful if not mandatory where problems are to be solved. The scientific method would be stillborn without mathematics and statistics. It could make no hypotheses and theories without logic. Increasingly we are realizing that people often do not know what they are talking about without some functional understanding of language and its pitfalls—which is the domain of the young discipline of semantics.

Between social science and natural science is a broad zone where

various disciplines and studies cut across both fields. Is fingerprinting social science or anatomy? What about Mr. Sherlock Holmes and all his professional descendants? How about Dr. Yerkes's revealing studies on the habits of chimpanzees? A very strong case can be made for *psychiatry* as a bridge between the two fields. Not only has it contributed enormously to social science, but it draws on it as well. "Psychiatry," says Dr. William C. Menninger, of the famous Topeka clinic, "is a medical science but it is also a social science. The psychiatrist, more than the physician in any other medical discipline, must concern himself with the social situation of his patients." Dr. Menninger names race prejudice and involuntary unemployment as especially detrimental to mental health. "These social ills should be among our very special concerns."

Some outstanding accomplishments

With the help of the questionnaires, interviews, visits to universities, and the reading of many monographs, I have accumulated a list of more than one hundred outstanding accomplishments in the social sciences. Some are brilliant individual research findings, some cover whole groups of studies.

Generally accepted as most important is what we may call the *culture concept* in anthropology and sociology. This label covers a body of principles derived from field studies, all revolving around the basic idea that an individual cannot be understood apart from the culture which contains him; or, to put it in a more familiar way, that man is a social animal. It is a broad and general concept, on the scale of Darwin's theory of evolution, and perhaps even more important. The anthropologists, by studying living cultures around the world and checking with the records of past cultures, have worked out some of the laws which govern all human societies everywhere.

Other accomplishments which have received high ratings are the following:

The Army Air Force program, as described in Chapter 3.

The studies in race relations of Boas, Benedict, Myrdal, Young, Klineberg, and others. There is as yet no proof of racial inequality that will meet the test of science. The real problem today is how to transmit

these scientific conclusions to the front line—where a lynching may be in the making.

Ogburn's intensive work on the laws of social change.

The Cross-Cultural Index at Yale—a kind of Rosetta Stone of anthropology.

Leighton's work with interned Japanese-Americans during the war. He discovered some fundamental principles of administration, and the governing of men.

Sampling theory and its applications to census figures, population, insurance, and the remarkable techniques of the Social Security Board.

The polls of public opinion—also founded on sampling theory. They are at present enjoying a great vogue, and constitute a lively and important addition to the science of human relations.

Elton Mayo's scientific approach to labor-management relations, combining anthropology, psychology, sociology, and economics, which is now spreading all over the country.

The "Middletown" surveys and techniques, especially the Yankee City studies.

Seashore, IQ, and other testing techniques. A culture-free IQ is needed, however, to compare people of different cultures.

Learning theory, especially the work of Dollard and Miller at Yale.

New light and new techniques on crime and punishment.

Area studies by social scientists during the war. Studies of Japanese morale by remote control. Surveys to assist the armed services in their dealing with native cultures, especially the preparation for the Okinawa landing.

Manpower analysis for recruiting soldiers and war workers—an outstanding statistical achievement.

Development of Gross National Product and other statistical techniques during the war by the War Production Board, OPA, Bureau of Agricultural Economics, Bureau of Labor Statistics, the Treasury, and other agencies.

Wesley Mitchell's work on business cycles.

The Keynesian approach in economics, especially for handling problems of depression, and of war finance.

Dr. Kinsey's analysis of the sexual life of American males. His goal is 100,000 case histories.

New techniques in public administration—city-manager plans, the TVA, traffic controls and traffic statistics, etc.

New techniques in social work, now increasingly influenced by the culture concept and social psychology.

The development of semantics by Ogden and Richards, Korzybski, Hayakawa, Johnson, and many more.

And so on, and so forth. A number of the above will be described in detail later. The bare list is presented here to give the reader an idea of the breadth of the field. Some of the projects I knew well; some, like Dr. Kinsey's work, I had heard mentioned; many were a complete surprise. I had had no notion that so much knowledge was already gathered. Most social scientists, I find, have little idea of the richness of their total field.

The major classes

Can we give the list a more orderly classification? To classify by disciplines is almost useless, as many of the achievements embrace two or more disciplines. The Middletown surveys and the Okinawa project, for instance, were the work of *teams*. Perhaps the following classification will do to begin with:

1. *Social science theory.* Generalizations and laws which have been verified and which hold good under similar conditions in any society. Examples: the "universals" in the culture concept, sampling theory, the reproductive index for population. The test of sound theory is its ability to predict, as we learned earlier in studying the scientific method.

2. *Applied social science,* sometimes called social engineering. Here theory is taken off the shelf and put to work in actual human situations. Examples: conducting a public opinion poll, conducting a Middletown survey, giving a million foremen in war industry the Training Within Industry program. It should be noted, however, that sometimes theory and engineering become hopelessly entangled. Flanagan had to stop work and develop theory from time to time in order to get on with his work of selecting pilots. The Manhattan project had to do likewise, according to the Smyth report. Lancelot Hogben has pointed out that with deep shaft mining in the sixteenth century, questions of air pressure, ventilation, and explosives became urgent. Lacking this practical urge, he says, chemistry including pure theory would have remained at the level the Greeks left it.

3. *Social techniques* developed more by trial and error and common sense than by the scientific method. Many apply only to our own culture, many are very useful, but for the long run they badly need more research and theoretical foundation. Examples:

city-manager plans, managed currency devices, compensatory economy plans.

It is interesting to remember that economics is the most widely read of all the disciplines, yet it has, along with political science, the weakest theory structure. There is, Heaven help us, no lack of theories, but as Colin Clark observed, they have not been verified. You can try economic prediction if you are man enough, but you will probably regret it.

Wasted knowledge

I asked a number of social scientists this question: *Do you recall any regrettable examples where accredited knowledge was available and not used?* It brought a lively list of grievances, of which the most frequent was against the high brass in Army and Navy who refused to let the scientists have enough scope in helping to run the war. Among the complaints:

> "Military government" did not really apply social science.
>
> Race data was not sufficiently employed in dealing with Negroes in the armed services.
>
> Social science was not adequately used even in psychological warfare—where it was obviously a natural.
>
> Army chiefs did not realize that 1942 draftees were a different type of youngster from those of 1917. "We tried to tell the chiefs what had happened to America in twenty-five years but they would not listen."

Not all the generals disregarded social science by any means. Great strides were made in its application during the war; witness the pilot-testing work. If an admiral or a general had his share of intelligence, he soon realized that here was a powerful new weapon. So powerful indeed was the final effect on top echelons that now, long after V-J Day, the services are financing large research projects on human relations, still strictly "classified." Among other benefits, this could lead to better communication lines between the officers and the rank and file.

Other examples of wasted knowledge brought to my attention —mostly by economists—were these:

> The mistakes in the Versailles Treaty which Keynes

predicted in his brilliant book, *The Economic Consequences of the Peace.*

The case of the 1,000 US economists who protested the Smoot-Hawley tariff in 1930. They said it would make the depression worse and it did.

The almost universal attitude in banking and business quarters in the 1930's that the US would have a disastrous inflation unless the federal budget was balanced. Some economists knew better. There was no inflation until the war.

The case of the 2,038 US psychologists who offered a ten-point program for peace and reconstruction on V-E Day, 1945. The politicians and diplomats paid no attention.

The treatment of German heavy industry after V-E Day. Economists knew what Secretary Marshall is now painfully finding out, namely, that German industrial recovery is the key to European recovery.

Bevin's rousing plan in 1947 to distribute the US gold hoard to finance the world. This was contrary to the most elementary economic knowledge.

One can page back through history and find numberless tragic examples where our present knowledge applied at strategic periods would have saved a crushing load of needless suffering. Men persecuted men, not because the persecutors were evil, but because they did not understand what they were doing. Consider the terrible beliefs of the Aztecs about the effect on crops of human sacrifice. Consider, on another level, the cruel practices of "hardening" laborers by working them fourteen hours a day; and "building character" in children by "breaking their wills" and maltreating them; the dreadful "iron law of wages" propounded by economists of a century ago, which held that workers could never hope to improve their condition.

As late as 1870 Herbert Spencer could affirm that the starvation of the idle, the exploitation of the weak by the strong, "are the decrees of a large, far-seeing benevolence. . . . Under the natural order of things, society is constantly excreting its unhealthy, imbecile, slow, vacillating, faithless members. . . ." Nobody could contradict this ferocious doctrine, except in his heart, because neither anthropology nor social psychology had then advanced far enough to prove its falsity.

Spencer offers a good example of the reckless and irresponsible character of unverified speculation in the study of man; social science$_2$ at its worst. He propounds a theory based on a mistaken analogy with the survival of the fittest in the jungle, and then without competent verification, uses it like some intellectual Caligula to condemn millions of poor people to endless and needless suffering and defeat.

Aldous Huxley once defined history as a long succession of gratuitous and unnecessary miseries experienced by the mass of the people at the hands of their leaders. Social science, including history, has now demonstrated the irrelevance of such practices, but ignorance reigned when most of them were begun. How many of our 1948 practices which waste lives and hurt people will some day be found based on equally false assumptions?

The great unanswered questions

Unsolved questions are always in the agenda of any developing science, and our survey has disclosed plenty of them. The scientists who helped me were, for the most part, frank about the things which had been left undone. There was little self-congratulation to be found but rather the contrary. . . . "We have been at it so long, and worked so hard, and produced so little. . . ." This is a better foundation to build on, however, than the mood: "We know all the answers."

The storehouse of social science has many empty shelves. How to contain atomic energy is, of course, the most immediately ominous problem, but plenty more are crowding right behind it. Here is a sample lot:

What are the interrelations between individual personality and culture?

How large can a society grow before its members lose touch with one another, and so begin to lose essential social functions—in a sense their very humanity?

What is the effect of a high energy culture on human beings, especially workers in mass production industries? Are mental diseases on the increase from this cause?

How can workers in western civilization again find interest in their work?

What kind of social structure can provide both freedom and economic security? Has Sweden found a formula?

How can we develop a more dependable psychology? (This is a favorite complaint among the experts.)

How can leaders be protected from the demoralizing effects of their own power?

What techniques in communication will help bring out more agreement?

What kind of education does a high energy culture demand? How many child-years per pupil are wasted by present methods?

How can we *apply* more widely the knowledge already available?

Such is the type of inquiry which awaits more research. I asked Dr. Louis Wirth, of Chicago University, among others, to give me a list of what he considered to be the "great unanswered questions." He did so, and ended with a statement so fine that I would like to put it in the record:

> The great unanswered questions of the social sciences are the great unanswered questions of mankind. How can we get peace, freedom, order, prosperity and progress under different conditions of existence? How can we establish the conditions of human well-being that have been attained in some parts of the world, or by certain groups, so that they will apply to other groups, and to other parts of the world? How can we achieve consensus in a mass democracy? How can we get the advantages of a rapidly developing technology without destroying the other values which we cherish?
>
> I know these are general and cosmic questions, but until social scientists make a usable answer to the ways and means of achieving such ends, they will be playing a game which may be interesting enough to themselves, but one which they have no right to expect society to support.

The accomplishments listed earlier in the chapter show that Dr. Wirth's injunction has been taken seriously by many in the field. We will now go on to a more detailed examination of some of them. I hope the reader will be as impressed as I have been with the work already done.

PART II

Landmarks and Achievements

There is no way but knowledge out of the cages of life . . .

They found themselves, too, in possession of mechanical power on a scale beyond all previous experience, and not simply of mechanical power: physiological and then psychological science followed in the wake of physics and chemistry, and extraordinary possibilities of control over his own body and his own social life dawned upon the Utopian.

—H. G. WELLS in *Men Like Gods*

CHAPTER 6

The Culture Concept

THE culture concept of the anthropologists and sociologists is coming to be regarded as the foundation stone of the social sciences. On it rests a mass of dependable knowledge about the characteristics that all men have in common. "The work of the social scientist," says Linton, "must begin with the investigation of cultures, the ways of life which are characteristic of particular societies."

Knowledge has been accumulating for more than a century in painstaking studies of hundreds of communities, both primitive and civilized. Here and in the next few chapters we shall examine the concept from various angles. First we will present some of the dramatic conclusions; then we will note the cultural rings which determine a large part of the behavior of a typical New Englander, George Rutherford Adams, who runs a filling station in Middleburg. We will go on to catalog a number of the constants, or universals, found in all societies the world around. We will watch a careful scientist record a fundamental study of group tension in a Japanese-American evacuation camp during the war. We will listen to what scientists have to say about the races of mankind in 1948, together with suggestions for lessening race conflicts. Finally, we will examine some of the laws of cultural change as developed by William F. Ogburn.

The culture concept greatly enlarges one's perspective. The effect is something akin to that astonishing photograph, taken from 80 miles straight up in a V-2, which showed the whole Colorado River region, the Gulf of California, and the great

curve of the earth bending the Pacific Ocean far to the West. The concept demolishes many cherished ideas and dogmas about ourselves and our society. It takes us clean out of Western civilization and its values—or whatever civilization we happen to belong to—and shows us what a Congo man, a Moscow man, a Borneo man, and a Detroit man have in common.

On the other hand, it shows how every human being is shaped by his culture in ways far below the level of consciousness. His thoughts, his language, his tool-using muscles, his tastes, all are developed in special patterns. To use them at all he must use them as he learned to do in childhood and in youth.

> Without the presence of culture, conserving past gains and shaping each succeeding generation . . . *homo sapiens* would be nothing more than a terrestrial anthropoid ape, slightly divergent in structure and slightly superior in intelligence, but a brother to the chimpanzee and gorilla.[1]

Long before Linton, Walter Bagehot had invented the phrase "the cake of custom." Presently came Sumner's epoch-making *Folkways*. This classic, I suppose, has influenced every social scientist working today. I read it just after leaving college, and it made a shambles of much I had learned there. The initial effect was to accent the differences in human customs around the world. It was pleasantly shocking to learn that this tribe considers it immodest to wear anything above the waist, while in that tribe it was customary to kill, with due ceremony, the ailing aged.

This preliminary effect soon passes. To the adult mind, the great lesson is not human differences, but *similarities*. Common needs persist in human behavior everywhere. They are the universals which govern *homo sapiens*, from the deepest jungles to traffic-snarled cities. To solve our current problems, generalizations and theories will have to be grounded on the principles which govern all societies, the common denominators of human existence.

Although no scientist can study his own species with the same impersonality he applies to a colony of ants, he can study villages in Borneo more objectively than villages on Cape Cod. He must

[1] From Linton's *The Study of Man*. This book is a brilliant inventory of the major findings in anthropology, and we shall refer to it often in the pages to come.

learn not to be surprised at anything, not even when wives in a harem belligerently defend the institution of polygamy (or polygyny, if you want to be technical). Some groups, says Linton, not only tolerate epileptics, they honor them as agents of the higher powers. Many an individual who is an inmate of a mental hospital here might be not only free but a respected oracle in some other society.

The investigator develops that tolerant sophistication which is characteristic of anthropologists: "Well, some do and some don't." Instead of applying his own moral values to a given custom, he concentrates on trying to understand its local meaning in its own cultural context. Such an attitude may be depressing to missionary zeal, but it is a great help in acquiring knowledge.

When enough investigators have collected information from around the Seven Seas, and comparative studies are made, the universals begin to appear. They are the needs and functions which *all* tribes share, civilized as well as primitive. These common denominators, when adequately checked by competent observers, give vital data about mankind, data which statesmen neglect at their peril. How, for instance, is it possible even to think about a world state unless it is founded on universals? Administrators of such a state must be able to recite them backward in their sleep: "This is what all men, everywhere, since time out of mind, under such and such conditions, are prone to do."

The group and its culture

One thing that men are universally prone to do, nay, must do, is to form themselves into bands, tribes, societies, and to evolve customs, folkways, systems of belief, for holding the group together and giving it a structure.

> A *society* refers to a group of people who have learned to work together.
>
> A *culture* refers to the way of life which the group follows.

Culture is the cement which binds the members of the group into a living organism. A group that lacks a common culture is not a society but a mob, an aggregate, a milling mass, with no more direction than a crowd in a theatre panic.

Living in groups is as characteristic of man as his mixed

dentition or opposable thumb. A people's culture is the sum of all the patterns of behavior, impressed from the cradle, which keep the group from flying into a thousand fragments, and help it adapt to nature and survive in its environment.

"A social organism," said William James, "is what it is because each member proceeds to his own duty with a trust that the other members will simultaneously do theirs. A government, an army, a commercial system, a ship, a college, an athletic team, all exist on this condition without which not only is nothing achieved, but nothing is even attempted."

It is difficult to overemphasize the importance of this observation—yet how few Americans understand it. If most people were not honest, did not do what they promised to do, did not take care of the children, help others in crisis, society would fall apart. Most people are "good," just as the charge account statistics prove; they pay their bills, they can be trusted. The culture concept makes it plain why this must be so. If any considerable fraction—say more than 5 or 10 percent—could *not* be trusted to do what was expected of them, there would be no dependable culture, no structure for the group, no living, growing society—just a kind of prisoner-of-war camp, with a polyglot mixture of prisoners. A functioning society is a self-disciplining organism, by definition. When we talk about "dictators," "democracy," "the state," "freedom," we often forget this underlying condition.

In *homo sapiens*, society rather than the individual has become the primary unit in the struggle for existence. Without admitting any such metaphysical idea as a group mind, the culture concept shifts our emphasis away from the individual and centers it upon the group. For centuries in the West, philosophers, theologians, educators, businessmen have concentrated on the individual. They have affirmed that he alone was responsible for his sins, his sufferings, his triumphs, and his defeats.

The anthropologists and sociologists find that the individual is not that kind of organism at all, and cannot be understood in such a conceptual frame. He is a product of his culture; he is a living part of his group, and can be understood and appraised only in relation to it. To judge him outside this matrix is like trying to understand a fish without reference to water.

A comprehension of the *double role* of the individual, observes

Linton, as an individual and as a unit in society, will provide a key to many of the problems of human behavior. "Until the psychologist knows what the norms of behavior imposed by a particular society are, and can discount them as indicators of personality, he will be unable to penetrate behind the façade of social conformity and cultural uniformity to reach the authentic individual."

Social scientists are a long way from working out *all* the relationships between the individual and his culture, but they have led the study of man out of a blind alley. They have shown where the true problems lie. They have begun to ask the right questions, and have demonstrated that man is a social animal to a degree hitherto unappreciated. Apparently he has always been one since he came down from trees. Sometimes his group comprises only a few families under the most primitive conditions, sometimes it fills a continent; but it is always there.

On this broad base, the science of man begins. A baby snake can fend for itself about as soon as it can squirm. A human baby, without a group behind it, either starves immediately, or if natural food is by some miracle available, comes to resemble a gibbering idiot. Civilized man can do more things than the savage because he has the opportunity to learn more things; his culture is richer; it accumulates like compound interest. The innate ability of the savage may be just as great.

Transferring cultures

Darwin, in the *Voyage of the Beagle*, tells of delivering two young people, Jemmy and Fuegia, back to their savage and naked clan on Tierra del Fuego. Although they had been exposed to British culture for only three years, they had learned to speak both English and Spanish, were neat in their dress and table manners, quick with their minds, and favorites with the crew.

> It was interesting to watch the conduct of the savages when we landed toward Jemmy Button: they immediately perceived the difference between him and ourselves, and held much conversation one with another on the subject. The old man addressed a long harangue to Jemmy, which it seems was to invite him to stay with them. But Jemmy understood very little of their language, and was, moreover, thoroughly ashamed of his countrymen.

The youngsters stayed in their native land but it was a terrible wrench. Heaven knows what became of them in that bleak and primitive environment.

Scheinfeld in *You and Heredity* presents Fung Kwok Keung, born Joseph Rinehart on Long Island, New York. At a tender age he was taken to China, and brought up as a Chinese boy. He comes back to America as a young man and we find him before the blackboard painfully learning English in an "Americanization" class. "He had become so thoroughly Chinese in manner, speech, habit, and outlook that he was distinguishable from members of the race only by his features." This is not something strange and abnormal; it will *always* happen when a baby is transferred to another culture.

New perspective on history

The culture concept gives us a new perspective on history as well as on ourselves. A culture is a process of gradual change, without beginning or end. "The spectacular rise and fall of certain civilizations," says Linton, "should not blind us to the fact that most cultures have never fallen." Our own American culture, for example, can be viewed as a continuum extending back unbroken through written history, through archeological time, through the unrecorded dark, to the very dawn of the race. If the chain had once been broken, you and I would not be here.

Individuals are born and die, the culture pattern slowly shifts under the pressure of climate, new invention, internal need; the *group* moves east or south, over Bering Strait, down onto the Mexican plateau, down to Patagonia. But always the children are protected, loved and taught; always the group closes in against its natural enemies, the cord is unbroken for a million years. The group is deathless and timeless. Often the individual cannot adjust to outside realities; the group eventually must.

With our accent on the individual in America, we are normally little aware of the society in which we have our being. In war and disaster the realization breaks through. A forest fire, a child lost in the woods, a flood on the Ohio River, a hurricane in Florida, a plane crash in the Rocky Mountains—and the community swings into action without thought of payment or prestige. People move to help! During the war the little town in Connecti-

cut where I live almost recaptured the neighborliness of the pre-machine age.

The culture concept gives us the closest fit to the truth about mankind yet discovered by the scientific method. Truths discovered by other methods do not concern us here. History as customarily written, from Herodotus to the present day, seldom focuses on this truth, but rather on individuals—on kings, generals, popes, presidents, prime ministers, prophets, the great men who rise out of the group, often to torment it. "While the popular view is that the leader makes the times," says Ogburn in his *Sociology,* "a realistic view emphasizes the exact opposite."

Formal history with its Caesars and Napoleons tends to be a record of the abnormal, the geniuses, sports, freaks and misfits, the glandular cases of mankind. It stands the social pyramid on its apex. The culture concept puts it back upon its base. The kings and the warriors are dramatic, true enough, but the real story concerns the society which protected its children and organized its food supply down through the ages.

Timetable for reformers

The culture concept focuses a strong lens, too, on measures for economic and social reform. What, after all, can even the most active agitators and propagandists do to a society embedded in the gigantic toils of age-old culture patterns? They can do something, but not as much as they think they can. Kluckhohn and Kelly point out that many social planners neglect the facts of culture. They think they can somehow wipe the slate clean and start afresh. It is impossible. "Every human being is born into a world defined by already existing cultural patterns."

The idea that a group can suddenly be emancipated from its past habits is no more sensible than the idea that a man who flaps his arms rapidly enough can fly. If the group could adapt to change as fast as some reformers hope, it would have dashed itself to pieces some time in the Old Stone Age. The group's main task is survival through reproduction and nourishment. The young can be protected, and a food supply secured, only in the momentum of long-established procedures.

One of my strongest impressions when I visited Russia, ten

years after the ten days that shook the world, was how little things must have changed. Where was this great revolution they talked about? The streets, the shops, the houses, the peasants in the fields, the factory workers, all looked very much as they must have looked under the czar. A Baedeker guide of 1907 described the railroads and local officials of 1927 with apparent accuracy. Power had shifted at the apex, but the base of the social pyramid seemed almost unmoved. Perhaps the common people *felt* differently from their predecessors; but who could tell? I doubted if 5 percent of their day-by-day behavior had been altered by the revolution. Yet what else could one expect in the light of the culture concept? The news we get in the headlines, the accounts from the historians, scarcely touch this monolithic continuity.

The adoption of the Weimar Constitution in Germany in 1919 was an attempt to start with a clean slate; to make Germans as democratic as New Englanders, in defiance of a thousand years of German cultural momentum. Naturally it collapsed within a very short time, and in the ensuing vacuum Hitler found his opportunity. There should be a lesson here for those vocal Americans who want to make "democracy"—on the corn belt model—the price of aid to hungry people East and West. No reform can ever bear fruit unless it is grafted successfully to the living tree of culture.

An understanding of the culture concept produces a curious mental paradox. A given institution in one's culture—say the banking system—comes to seem at once weaker and stronger. One can no longer stand in awe of it as an eternal verity, for one knows it is man-made and bound to change or disappear as external circumstances change. Where are primogeniture and the duel in modern America? But for the short view the institution commands increased respect. If one kicks it too hard, one is extremely likely to get his foot broken.

All this puts the fears of those senators who believed that social science meant wild reforms, -isms and -ologies, in quite a different light. On analysis, we find that the anthropologists have described the most massive brake on wild reforms possible to imagine; more effective than whole armies of FBI and secret police. The senators can relax.

The formative years

The folk saying that if the church has a boy until he is six, he will be a good communicant for life, has strong support from social scientists. The demonstration that any healthy infant can adjust to any culture—if he is not discriminated against because of the color of his skin—emphasizes the vast importance of the formative years. Four schools of thought are today merging to drive home this conclusion—the anthropologists, sociologists, psychologists, and psychiatrists. It is a formidable array.

The *anthropologists* say that since Cro-Magnon days, at least, children of any nation or race have practically the same inborn equipment. But from birth every experience helps to shape a child to the culture in which he finds himself. Even by the age of three or four he has learned hundreds of habits and the fundamentals of a language. He has received thousands of impressions which he will not consciously remember in later life, but which already stamp him as a member of Eskimo or Japanese or American society.

The *sociologists* emphasize the educational aspects, the general shape of character that results, and the institutions in which it expresses itself.

The *psychologists* working on education confirm the importance of early training. They study the responses and development of young children, aided with all manner of laboratory equipment—cameras, sound-tracks, statistics, and slide rules. Others try to analyze more and more details of the vital process by which each fresh individual becomes a culture-carrier. With the anthropologists they are beginning to find out how a given type of personality is produced by a given culture.

The *psychiatrists* emphasize emotional influences on children. They show how early experiences may mold an individual's character irrevocably. Their work, which ties in so closely with that of the anthropologists and psychologists, also has a medical aspect. Emotional habits can be shown to be connected in their formation with physical habits. So far the psychiatrists have done more than the others in interpreting motives and reasons for individual behavior.

All these specialists talk more and more about the vital impor-

tance of security and affection in these early years. The lack of security in childhood brings many dire results, examples of which can be seen in any mental hospital and any mob out of control. On this one need the specialists meet in practically unanimous agreement.

The phrase "culture and personality" is a recent label for the general field of inquiry. Obviously, it has great possibilities in correlating the different approaches just discussed and applying the knowledge gained. One result is to revalue the work of teachers, nurses, and especially mothers, who handle the "cake of custom," so to speak, before it is baked. A cultural change could be introduced, as through a funnel, through these molders of the next generation.

Optimistic note

Finally, the culture concept gives us hope that many of our problems can be solved. If people were bad by virtue of their "blood," or their genes, or their innate characters, there would not be much we could do about it. But if people are basically all right, and the problem lies primarily in an adjustment of culture patterns, or *to* culture patterns, perhaps a great deal can be done about it.

Theoretically, a society could be completely made over in something like fifteen years—the time it takes to inculcate a new culture into a rising crop of youngsters. But such a theory assumes that parents, nurses, teachers, have all been re-educated themselves, ready for the inculcating task—which, as Euclid used to say, is absurd. But it helps, I think, to know that the trouble does not all come from an erring and invariant human nature. It comes mostly from culture patterns built into the plastic human nervous system. Culture patterns do change, and can be changed.

These are some of the exciting vistas which anthropology and sociology open up to the inquiring layman. My image of the V-2 photograph may not be too exaggerated after all. If we let this knowledge flow into our minds, the world can never look the same again. Furthermore, it is not a doctrine, a philosophy, a prophet's message, it is social science₁, where reasonable proof has been established, and speculation practically eliminated. It is something you can really lean up against.

CHAPTER 7

The World of George Rutherford Adams

ANOTHER way to bring the culture concept home is to take a neighbor in one's community and try to find out the sources of the cultures which have molded him. Warner and Lunt in their excellent *Yankee City* series have done this in statistical and scholarly detail, but we will be content with a more impressionistic survey.

Here, for instance, is George Rutherford Adams, an imaginary character who runs a garage, filling station, and milk bar in Middleburg, Connecticut. On the Warner and Lunt six-class scale, he would be a member of the lower middle class which, when bracketed with the upper middle, contains the most energetic and dependable citizens in the community. He is thirty-one years old, five feet nine, weighs one hundred and fifty-eight pounds, and was a bombardier with the 16th Air Force in the war. He is a Legionnaire, an Elk, and an active member of the Middleburg Volunteer Fire Company; he goes to the Congregational Church half a dozen times a year. Junior is four, and the baby is eighteen months. His wife taught seventh grade in the Hill School before he married her.

George likes to listen to ball games over the radio as he works in his shop, and he loves to go trout fishing in the spring. He is a Republican in town politics, but twice he voted for Franklin Roosevelt. He is well regarded in Middleburg, for at one time or another his wrecker, a 1930 Pierce Arrow, has pulled nearly everyone in town out of a ditch.

What kind of being is George Rutherford Adams? What shaped him? How did he get to be what he is? We know that he is the product of a group and the culture which goes with it. What group and what culture? Here we encounter a hierarchy of attachments and loyalties. George is not the product of a single culture, as the Greenland Eskimo is (or was), but of a whole ring of cultures, one inside the next. His group, meanwhile, is now so large that it covers a continent—though we can also distinguish a number of subgroups to which George belongs.

He identifies himself loyally with Middleburg, with Connecticut, with New England, in a declining scale. His major loyalty, however, is to the USA, with its three million square miles and 145 million neighbors. This has now become his community, his We-group, in the most binding sense of the term, as it is mine, and probably yours—unless you live in Texas, which is a special case. It is so by the test of a common culture as well as by national sovereignty. The concrete highway, even more than the railroad, has broken up the old local patterns, and is making "home" mean to Americans a place where you can get a good ice-cream soda, decent service at a filling station, beauty shops, ice-water, sports writers who make sense, and Bing Crosby. . . .

The nation has also become George's *economic* unit in these days of fresh vegetables from California, lumber from Oregon, and oil from Louisiana. In the times of Obadiah Adams, deacon of the Methodist Church, blacksmith of Middleburg, and George's great-great-grandfather, the town came first, Connecticut also claimed a fierce loyalty, but New York State was practically a foreign country separated by a tariff wall. America, reaching way out to the wilds of Ohio, was a pretty vague concept to Obadiah. He never went fifty miles from where he was born in all his life. His economic region lay within that radius; even the iron for his horseshoes came from the Connecticut hills. He knew the face and name of everyone in town, and many in the region.

George has heard much about rugged individualism. He may think he is on his own, above the crowd, responsible only to himself and to his God, but the facts do not bear out his assumptions. In Middleburg there are many, many things he might like to do, but cannot do, because the folkways forbid it. For instance, he may not whistle in church, or grow a beard, or strike a woman,

or eat with his fingers, or take off his clothes in public on a hot day, or wear brown shoes with a tuxedo or bright colors at a funeral, or appear at the Elks' Hall with a patch on his coat. His freedoms are strictly relative. George can choose his necktie from the rack, but he must wear a necktie at the appropriate times. Certain foods highly prized among many peoples, such as eels, snails, certain kinds of grubs, he does not think fit to eat. Although his hunger is physical and common to all men, his recognition of how he will satisfy it is cultural.

Superstitions have declined somewhat since Obadiah's day, but George still avoids walking under ladders, would rather not sign a contract on Friday the thirteeenth, and wants no black cats to cross the road. He is perfectly sure, too, that Ellery Sanford can find water every time with that willow wand.

Where did these codes and beliefs come from? They started coming to George at the moment the doctor slapped him on the back, and he let out his first yell. They came from parents, teachers, schoolmates, relatives, truck drivers, drill sergeants, ministers, policemen, store-keepers, the drug store gang, from nearly everyone who crossed George's path during his impressionable years. Think, for instance, of all the people who taught him to talk, including the voices on the radio.

Where did *they* get the codes? From the generation which inducted them. There was nothing floating in the air; codes always come from people. A few of the simpler habits, like drinking from a cup, or sitting on a chair rather than on the ground, may have been handed down unchanged for twenty generations. Altogether we can identify at least five major cultural rings from which most of George's behavior is derived.

1. To begin with the broadest, he is a product of *civilization*. For more than 6,000 years the group from which he descends has practiced a widespread division of labor and city living, based on the invention of a storable grain. This marks off his behavior from nature peoples who never developed cities, writing, architecture, or mathematics. At the same time it connects George with the peoples of India, China, Persia, and other areas where civilization as defined has been long in evidence. To him personally it means, among other things, living in a house, going to school, eating cereals, paying taxes, using money.

2. Next comes *Western civilization* as distinct from other civilizations. From this source George gets the Christian religion, many of his standards of right and wrong, Arabic numerals, nationalism and the sovereign state, modern science and technology, tinkering with machines, music in the diatonic scale, the free market—now, alas, much corrupted with monopolies and government controls—property rights, pecuniary emulation, and military conscription, to name a few.

3. The next smaller ring is *Anglo-Saxon culture*—that part of Western civilization in which English is spoken. Here George learns his language—*the most important single element in his entire cultural inheritance.* Without language the members of the group could not communicate, and would rapidly disintegrate. Man would cease to be a human being. Here, too, he learns to vote and believe in *habeas corpus*, the Bill of Rights, political democracy, the idea of progress, and romantic love as the only proper basis for marriage. He acquires a streak of Puritanism, a strong sense of superiority to foreigners, and the ability to cover up his emotions. He is taught to disapprove of people who shout and weep and wave their hands. For a grown man to cry in the presence of others is humiliating in the extreme. He stands nearer the Iroquois than the Latin peoples in this respect, but nearer the Latins in his public laughter.

4. Next comes *North American culture*, which George shares with English-speaking Canadians, but not with Mexicans. Here he picks up many words and place names and a few customs—like canoeing and corn roasts—which derive from the Indians. More than half the forty-eight states have Indian names, including his own Connecticut. He has been heavily influenced by the frontier pattern, for even New England was the frontier a few generations ago. This pattern helps to reinforce George's individualism and a certain social irresponsibility, especially toward public property and resources. Cut out, get out, move West, was the frontiersman's idea. The Pacific has long since been reached, but the irresponsibility remains, a cultural lag. It is shown in the fabulous wastes of top soil, timber, grasslands, natural gas, wastes which mean nothing whatever to George, but which communities in Europe could not tolerate. It is shown in the political immaturity and awkwardness of most Americans when faced with inter-

national contacts. There is nothing in their culture to help them cope with such situations.

Here are other patterns that North America gives to George: the great motor car complex on which he makes his living, Hollywood, radio habits, the comics, mass production, bathrooms, a sublime belief in education, service clubs, baseball, the success story, a power of laughing at himself, juke boxes, jazz bands, and a propensity to spoil his children. Notice that we are mixing up material things with customs and attitudes, but so they are mixed in the cultural stream.

5. *New England* is the last ring. Though most of George's habits were learned there, its unique contributions to his way of life are few; far fewer than in Obadiah's case. George is more tolerant of Negroes, coming from an abolitionist area, than many Americans. New England has given him some favorite dishes, such as clam chowder with milk; a nasal twang in his speech, a disposition to be close-mouthed, to be thrifty and count his pennies, and to be suspicious of the neighbors; the moral virtue of early rising and hard work.

The Old Man of the Sea

We have given only the roughest indication of the items in each ring. To prepare a full account of the habits which George has learned, and largely follows without taking thought, would fill a library. Reflect a moment on the unthinking customs you yourself follow in a single day—from the time you get out of bed in the morning until you snap off the light at night. There must be thousands of them.

It is obvious that most of George's artifacts, habits, and systems of belief come from Western civilization, from the Anglo-Saxon culture, and from North America. The first has been in existence since Socrates, say for twenty-five hundred years; the second since Chaucer, say six hundred years; the third since Captain John Smith, say three hundred years, but Indian additions to the last reach back much further; Indian corn probably antedated Homer.

George Rutherford Adams is an amalgam of these far-flung influences. Wherever he goes he carries this great cultural load —like the Old Man of the Sea. Nobody can get at him, talk to

him, tell him anything except in relation to this burden. When he met Chinese, Burmese, or Dutch during his overseas service, he judged them by these standards, built into his nervous system as the transmission is built into a car. If he should take a tourist cruise in the Caribbean, he will judge Haitians, Cubans, Mexicans in a similar way. Unless he is aware of his reaction, it is unlikely that he will judge them fairly. Because their culture rings are somewhat different, many things they do will vary from what he does in similar circumstances, and he will blame them for it. At times the blame may flare into anger.

If we compare George with such a person as Laughing Boy, the Navaho hero of Oliver LaFarge's novel by that name, we see a strange and significant contrast. George is caught in a whirl of cultural rings, and an interdependent society far beyond the face-to-face range, which make his way of life more complicated and uncertain than that of the Indian. George can never be so sure what is the right thing to do, as Laughing Boy learned to be. His loyalties do not run to a single tribe, a definite cosmology, a straight and narrow path in all of life's main turnings.

George does not belong to anything very hard since he left the Air Force. He is worried, despite the breezy way he comes out to fill up your car. He had to borrow so much money to start his business, and prices have been so high. He is not sure what is in store for him and the family. He does not see clearly where he is going, or the country, or the world. The bomb, now, and those Russians, and the next depression . . .

Laughing Boy's world was steady as a rock; but George's sometimes seems to be breaking apart.

CHAPTER 8

Common Patterns of Mankind

"THOSE who know no culture other than their own," says Linton, "cannot know their own." In this chapter we will assemble thirty-three characteristics of human relations which anthropologists have discovered by comparative studies to be common to all or most societies. After he penetrates the surface differences between peoples, the student strikes the mother lode of human similarities.

The similarities begin, of course, with biological traits and limitations—how human beings are equipped to eat and digest and reproduce. Julian Huxley, in *Man Stands Alone*, points out some less obvious biological characteristics:

> The human species, considered as a species, is unique in certain purely biological attributes; and these have not received the attention they deserve, either from the zoological or the sociological standpoint.
>
> In the first place, man is by far the most variable wild species known. . . . Man has a far wider range than any other animal, with the possible exception of some of his parasites. . . . The human type has maintained its dominance without splitting. . . . Man is unique among higher animals in the method of his evolution. Whereas, in general, animal evolution is divergent . . . in man, after incipient divergence, the branches have come together again . . . until the course of human descent is like a network.
>
> All these biological peculiarities are interconnected. They depend on man's migratory propensities, which themselves arise from his fundamental peculiarities, of speech, social life, and relative independence of environment.

Before Huxley could make these arresting generalizations, scientists had to examine many different races of men. The universals or constants which we are about to set forth also depend on hundreds of field studies, and even now are only provisional generalizations, in the sense that they may be upset by later studies. At least they are far more dependable than generalizations about human nature based on a single society or, worse yet, on an ethical or philosophical preconception.

How do these universals qualify as accredited science? Their case is peculiar. Behavior of this culture and that is described by the field men, and under cross-analysis similar patterns appear. The logical conclusion is that they are constant patterns operating in all societies, past and present. How can this be proved? It cannot be. The discovery of one community contrary to the pattern would disprove it. What we have, apparently, is a hypothesis with a high probability factor. It *might* be upset by future investigations, but the probabilities are against it. Incidentally, there are not many nature peoples left to study, uncorrupted by diffusions from other cultures, such as gunpowder and alcohol. Meanwhile, historical records of past societies have been pretty well canvassed by social scientists.

The first field studies

Let us go back a bit and see how it all began. In the 1840's, Lewis H. Morgan, a young lawyer in Rochester, New York, became interested in the language and customs of the Seneca Indians. This study presently led him into the family and social organization of the Six Nation League of the Iroquois. He defended the Indians in a lawsuit against a company which was trying to cheat them of their land and, as a result, in 1847, he was adopted into the Seneca tribe, under the engaging name of "Ta-ya-da-o-wub-Rub."

A law case in Michigan gave Morgan an opportunity to study the kinship system of the Ojibwa. From there he extended his investigations into kinship systems in various cultures around the world, and published several books on the subject. He became the father of cultural anthropology, with an influence on many successors, including Boas—a towering figure—Wissler, Rivers, Bandelier, Kroeber. Said Wissler: "Morgan . . . dealt firsthand

with data on primitive peoples. . . . He made objective observations, using chiefly data on relationship systems and marriage. The former may be said to have been discovered by him, and first used in a scientific way. . . . If he did not inaugurate anthropological field work, he was one of the first to make a thorough study of the social life of a tribe."

We have here a scientific ladder reaching back a century. It is interesting to note that the man on whose shoulders other students began to stand was an American. Indeed, cultural anthropology has been chiefly an American science from the beginning. By 1936, enough material had accumulated to enable Linton to prepare his definitive inventory.

The Cross-Cultural Index

Meanwhile, George P. Murdock, whom we shall meet later on Okinawa, was compiling the Cross-Cultural Index at Yale. He and his staff assembled records of more than 150 cultures, past and present, and indexed them under such headings as "law," "housing," "financial methods," "funerals," "education," and so on. If you took, let us say, a lively interest in funeral ceremonies around the world, a trip to New Haven would give you the complete story. You would not need to wade through all the books and documents to find out about burial customs; the record would be there ready for you in the index.

At this point our image of the storehouse of scientific knowledge becomes very concrete indeed. You can go and look at it with your eyes, kick it—but gently, please—with your foot: 70 file drawers, containing a million entries, with more continually being added. The index was used by the Navy in the war, preliminary to the invasion of the Marshalls, the Marianas, and the Carolines, and saved many costly mistakes when the marines got ashore.

Universal needs

The first task of every human society parallels the first task of all other animals—namely, to adjust to the environment and survive. The *task* is thus a universal, but the *performance* is infinitely varied. Geography, climate, available materials, the rate of invention, sheer accident, all help to determine whether people

eat raw fish or coconut meat or deep-dish apple pie; whether they live in tents or ice-huts or steel skyscrapers. The skyscrapers or the tents, the coconut meat or the fish, are *traits* of a given culture. Similarity appears again in methods. Two farming communities at the ends of the earth have common characteristics not shared by the fishing village which may be close at hand.

Here is a classification of needs and functions which seem to be universal. They are found in every society so far studied and are satisfied by thousands of different customs:

1. Language—the most important of all.
2. Status of the individual in the group.
3. Family and social organization.
4. Methods for dealing with materials, food, shelter, clothing, and so on.
5. Government.
6. Religion.
7. Systems for explaining natural phenomena—magic, mythology, and lately science.
8. Rules regarding property, who owns what, barter, trade, money.
9. Art forms—stories, poems, songs, architecture, sculpture, and design.
10. War. This is a very ancient and widespread element, though some students disagree about its universality.

Although every human child will require a means of dealing with these needs and functions, no child knows the answers by himself. Every detail must be taught him by the culture. Many details are taught to every individual, others to selected children. Certain boys are trained as carpenters, others as medicine men or doctors. Girls are always trained differently from boys.

Observe that no reading, writing, or arithmetic is necessarily included in the above list of ten primary needs and functions, nor any "liberal arts" courses. The list shows the elements of every child's *real* education, what he must have for life, in contrast with the formal education taught in the schools of Western civilization. When we get the two curricula a little closer together, perhaps so many child-years will not be wasted in school.

We will now look at some universals, grouping them under headings like "the family," "crime and punishment," and num-

bering them consecutively. Most of them have been compiled from Linton's *Study of Man*, and checked with other specialists.

What use are they? Here is an example. Suppose you are worried about the condition of the family in America. The divorce rate bothers you, or the unfortunate manners of the young, or the difficulty in making life tolerable for the aged. Before joining a spirited crusade to do something about it, it would be a good idea to find out some of the conclusions that social scientists have reached concerning the cardinal institution of the family. Maybe your crusade should never start, or should take a different form. Here are some important universals about the family, roughly sketched.

The family

1. *Homo sapiens* has apparently always lived in permanent families, though the form changes greatly from tribe to tribe. The complexity of the form does not vary with technological progress. The most intricate systems known are those of Old Stone Age cultures in Australia, while the American family organization in the land of mass production "is as simple as among the Great Apes."

2. The idea, favorite among cartoonists, of the old man with his vast beard, his knotted club, and his flock of terrified women is completely false. It was a Victorian myth, constructed to flatter the British family of that time, especially papa in Dundreary whiskers, who was supposed to be the pinnacle of human virtue, only reached by incredible exertions up a long ladder of progress from the caveman. Not only is the "old man" unknown in cultural records, but he is highly improbable. Because of the long human life span, too many young males would be in the field competing with him. If some muscular leader were actually ferocious enough to drive off the other males and appropriate the females, who would do the work? The community would lose most of its horsepower.

3. The principal function of the family is to protect the young. "It remains the most effective mechanism for the care and rearing of children." Practically all societies leave these duties to the family group. The association between mother and infant is everywhere most intimate, as with other mammals. This means that baby farms and group nurseries, however sanitary and progres-

sive, are no substitute for a mother's love and care. Legislators are beginning to realize this in devising modern social security systems where "family allowances" are granted directly to the mother, rather than to social workers. We are dealing here with the average mother; some women, of course, are not fitted for the task.

4. A family includes able-bodied adults of *both sexes*, everywhere, though they may not always be the true parents. The presence of one or two males is essential in child-rearing. Without it, boy children are handicapped in learning the masculine roles they will be expected to fill.

5. The family always practices division of labor. The mother has her duties, the father his, the children theirs, grandfather his.

6. The family functions as an economic unit, within which nobody is regularly paid for performing his duties.

7. The family cares for the aged as well as for the child.

8. The superior physical strength of the male makes him everywhere the formal ruler of the family and of society. The free-swinging Amazons, alas, appear to be another myth. "It is questionable whether there is any society in existence which is actually dominated by women."

9. Monogamy is the only form of marriage permitted by all societies. It may, however, co-exist with other forms of marriage. Polygyny is widespread, and polyandry not uncommon.

10. The Victorian idea of marriage based on romantic love, now brought to super-colossal heights by Hollywood, is found in very few societies. Marriage involves such an intimate joining of whole families who may have been strangers, that families in most societies have felt obliged to control it. The chances of a successful home in which to rear children appear to be at least as good in an arranged marriage. Romantic love, of course, occurs everywhere, but marriage based on it is usually regarded with extreme reserve. Often the romance is worked off by means of premarital unions. In *Coming of Age in Samoa* Margaret Mead describes one such society very skillfully.

11. Marriage probably never developed from capture. Group marriage is another Victorian myth. Wife-lending, however, is fairly common.

12. All societies recognize divorce, but *no* society approves it. The ideal marriage everywhere is for keeps.

13. Some types of incest are taboo in every known society, with the strongest prohibition against marriage between mother and son—the Oedipus tragedy. Father and daughter marriages are permitted in at least one society, while brother and sister marriages are not too rare, especially in royal families as in the case of the Pharaohs.

14. Big families are the human norm, and there seems to be sound sociological as well as biological reason for it. They form a better environment in which to bring up children than a small, highly emotional family. Children educate each other and learn to get on with one another in large families. This may not, however, mean many children per mother. Often "the family" is a small clan with several mothers, and the children all running together.

15. Marriages across cultures are always difficult. (A good many veterans and their overseas brides are now finding this out.)

Crime and punishment

16. Every society known provides definite punishments of which *ridicule* is the most severe and the most effective. Some societies have no other form of punishment at all! If someone has ever broken a social code and has been laughed at in front of a crowd, he knows the full impact of this compulsion. Jail rather, or even death! It is said that a Chinese gentleman will go to any length to avoid loss of face. So will George Rutherford Adams.

17. Stealing within the community is everywhere a very serious offense. Stealing from the out-group, however, from those foreigners, is often regarded as a public benefaction. A face-to-face band always cares for all its members; nobody is allowed to be in dire want. Beggars come only with civilization. Furthermore, to steal is extremely hazardous in a small group, for thefts can be easily traced. The first offense is usually forgiven, and the lesson pointed out. But when a band member is caught stealing the second time, he is punished severely, sometimes by death.

Some economic universals

18. No society has ever been found with complete communal ownership of property. Private property in personal belongings is

universal. Primitive communism thus appears to be another myth.

19. At the same time private property in the natural resources of the group is rare in primitive societies. No individual has exclusive "rights" in fishing areas or hunting lands on which the livelihood of the group depends. Such property is held jointly, and must be passed on intact.

One of the greatest breeders of dissension and violence between the early settlers in America and the Indians was that the Indians followed this more normal definition of property in natural resources, while the settlers followed the special Anglo-Saxon definition. When they "sold" land for a few knives and beads, the Indians thought they were transferring hunting rights only. They were naturally bewildered and angry when the palefaces began to exercise exclusive ownership. The Europeans, on the other hand, felt that the Indians were liars and cheats for not living up to their signed agreements. This is a typical example of cross-cultural misunderstandings that lead to bad blood and war.

20. Free giving is a high virtue in many societies, while the desire for profit is often absent. Thrift and frugality, instead of being virtues, are often considered the reverse. Wealth is frequently used for conspicuous consumption rather than for increasing the stock of capital. The Kwakiutl Indians of Vancouver hold prestige contests at feasts called *potlatches*, in which a man tries to shame his rivals by giving away or burning up valuable goods. Veblen played on this theme of conspicuous consumption in *The Theory of the Leisure Class.*

21. Some individuals are acquisitive, and so "all societies have had to develop techniques to insure a share of the necessities to all members." Otherwise the greedier members try to monopolize necessities. All societies place limits on the acquisition of property. A recent technique to limit acquisitiveness in our society is a graduated income tax reaching 86 percent at $200,000.

22. No human culture has ever remained long at the stark survival level on which classical economists mostly base their theories. "Economic Man," who always acts on the principle of the lowest cost, the largest take, and maximum efficiency, can be found only in books. Flesh and blood men always elaborate the necessities, and begin to look for noneconomic satisfactions the moment they rise above the level of bare subsistence. *Indefinite*

elaboration is one of the most striking of universals. Even the Old Stone Age people etched designs on their axes. Where is the economic justification for an Egyptian pyramid, a Maya stela, Chartres Cathedral, or the Washington Monument? Think of the progressive elaboration from a shepherd's pipe to a symphony orchestra! Economic theory which leaves out this universal drive can never fit the facts.

Universals for group members

23. Every normal person needs response from his group. Hermits and recluses are abnormal everywhere.

24. The individual needs to *feel important.* At some point in the society he must think he has a useful place, even though it be a modest one, and that he is filling it adequately. This is demonstrated in the status structure of every society ever known, and is of the utmost significance.

25. Prestige is a major motive for individual action, stronger than money in most societies. In our society we have, until lately, combined the two, that is, defined prestige in terms of money. Depression, leisure, and the graduated income tax seem to have relaxed the pecuniary incentive a little.

26. The individual constantly feels the need for a leader. He wants somebody whom he can trust in charge of his group.

27. The individual shows a deep need in every society for friends of the same sex.

28. He needs a way to work off frustrations. Continually obeying the rules of the culture gets him all bottled up from time to time. To preserve his equilibrium, if not his sanity, he must let off steam. We have no recognized method for doing this, but other societies provide an official Saturnalia, a fiesta, or Walpurgis Night, when taboos are ceremoniously suspended, and the sky is the limit. Our nearest approach seems to be the businessman's convention, or the annual convocation of the American Legion. A distinguished physicist once told me that he hated to give up tennis because hitting a ball hard was such an admirable outlet for his aggressiveness.

29. In the Victorian era it was fashionable to complain that "uncivilized" people—such as African Negroes or Mexican Indians—did not think logically, and were therefore hard to deal

with. Only in recent years has it been made perfectly plain that civilized people do not think logically either. The record of the anthropologists demonstrates that man is not a logical creature. Shaw has observed that we only use our reason to support our prejudices—but that may be a little strong.

The record also shows that W. I. Thomas, the sociologist, was not far wrong when he wrote of the "four wishes" of mankind a generation ago. Every individual, he said, needed from his group four things: *response, security, recognition, and new experience.*

Universals of government

30. Linton makes a sharp distinction between "group," "government," and "state." A group or society he defines as any collection of people with a social structure. As we have seen, it is the transmitter of culture to the young, and varies in size from the face-to-face band of a few hundred to all the people in George Adams' continent. The leaders of the group or society are by definition the government, official or unofficial. No society has ever been found without a government—which seems to leave the philosophical anarchists high and dry. The *state*, however, is something different. It is the term for the society and its government when they are *organized as a sovereign power, prepared to wage war when occasion rises.* This gives the state a number of unpleasant powers—unpleasant to the peace and comfort of the individual.

Without war, or the threat of it, we might not have an institution corresponding to "the state" at all—no such phenomenon as Athens, Carthage, Rome in the old days; Germany, Britain, Russia, the United States today. If war is a universal, it follows that the state is one too. But as we noted earlier, war has not been conclusively established as a universal need.

31. A well-knit, face-to-face band—say among the Plains Indians—holds formal government to the absolute minimum. There is not much for the big chief or the elders to do. Every member knows his place, his duties and rights, and disciplines himself so well that he needs little governing. The most successful nations, observes Linton, are those whose citizens feel toward their country in somewhat the way nature peoples feel toward their tribe. If citizens have this feeling, almost any form of

government—monarchy, theocracy, democracy—will work. If they lack it, the finest constitution will be of no avail. Looking around the world in 1948, it appears that the Swedish people have such a feeling. The English have it in their native isle. The French have less of it. The melting pot must bubble some more before we get it in America, where the battle cry of a thousand pressure groups is still "Me First."

Status and role

Prepare now for a surprising universal!

32. "Individual talent is too sporadic and unpredictable to be allowed any important part in the organization of society." Social systems which endure *are built on the average person*, who can be trained to occupy *any* position adequately, if not brilliantly. If roles had always to be filled by Napoleons or Lincolns, they would not be filled at all. But the social scientists concede that in periods of rapid cultural change, like the present, talented people often come to the fore. This universal upsets practically everything most of us have always believed about leadership, yet its logic is hard to answer. The facts, of course, are only too clear. Practically all societies, for nearly all of the time, *do* have mediocre leaders. Just look around the town.

33. Status can be either *ascribed* or *achieved*. You are born to a social position, or you fight your way up to it. In feudal societies status is mostly ascribed; the son of a noble becomes a noble at birth; the son of a serf remains a serf. In America the accent is on achieved status—which is a technical expression for the success story. It is this fact which is forever driving pins into George Rutherford Adams. Any boy, preferably one born in a log cabin, can be president, so goes the saga. The US, however, places limits even here. In our culture today, no matter what the law says, no Jew, no Catholic, no Negro, and no woman could probably be elected president.

Americans attach high value to the boys who come up the hard way; but Americans are more nervous and worried than members of some cultures to whom they feel superior. An ascribed status makes the individual easy in his mind, and reduces conflict, rivalry, competition, and snobbery. People in such societies feel an emotional security not often known on Wall Street or Main Street.

More serious is the disintegration of the small community, the band, in mass production societies. "The band is the most constant of all social phenomena and, in many respects, the most uniform."

The breakup of the band, with its self-discipline and emotional satisfactions, presents modern society with what Linton believes is its gravest problem. Where shall we find a substitute? Most people in our great cities have no neighbors at all in the old sense. Obviously, we cannot go back to the nomad tribe or the self-supporting village—though we could be thrown back. Just as obviously, we cannot go on like this indefinitely. The great demand for decentralization is thoroughly understandable. Social scientists have a major challenge in blocking out the structure of a decentralized society in the atomic age. What we also seem to need, far more than increased production, or bigger and better station wagons, is a series of mutually consistent ideas in which most members of our society can participate and believe.

There is a term which haunts all discussions of this nature: *human dignity*. I think I know what it means but have never seen it adequately defined. A picture comes to me of Maya Indians as I saw them repairing the great pyramid at Chichen Itza. Perhaps the social scientists have given us a key. Perhaps human dignity appears when a person is sure of his status and role; when strivings, pushings, schemings to achieve another role are at rest; when one knows that he belongs and life is clear before him.

CHAPTER 9

Revolt in the Desert

THIS is the story of a group of social scientists, headed by Alexander H. Leighton, who left their laboratories, clinics, and field work to make a study in a community boiling with frustration and aggression. We remember that critics have advised social scientists to do more of this sort of thing: to take their notebooks to trouble spots and observe at first hand groups under stress. We are going to follow an outstanding example of the technique, and see some fundamental knowledge added to the storehouse. Dr. Leighton was by way of being a one-man team himself as both psychiatrist and anthropologist.

The trouble spot was a community of Japanese-Americans uprooted from their homes on the Pacific Coast during the war, thoroughly shuffled, then set down in the deserts of Arizona. After months of unrest, a general strike broke out which might have flared into a massacre with international reprisals. The camp was guarded by the Army and administered by the Indian Service. Leighton was delegated to observe this community, advise the officers, and search for valid conclusions. He says:

> . . . What in all this is recurrently human? What are the laws of individual behavior, what are the perennial social forces at work here? . . . What general characteristics of human nature are in action, a knowledge of which would prevent such sudden diseases of society as this? The breakdowns of man's organizations of himself and his fellows are not events isolated in evacuation camps. They cover as much of the earth as is covered by the human race, and questions that run deeply into the fate of mankind in a shrinking world are involved.[1]

[1] *The Governing of Men*, Alexander H. Leighton, Princeton University Press, 1945. Most of the data for the chapter comes from this book.

Japanese-Americans

Japanese people coming to America to settle on the West Coast did not have the culture rings of the ancestors of George Rutherford Adams. They had centuries of civilization back of them, to be sure, but not Western civilization, not Christianity, not Anglo-Saxon culture, and above all, not the English language. By 1940, however, they were well on the road to making the adjustment; to becoming "acculturated," as the anthropologists say. Their children were at home in both worlds.

Tuna fishermen from Terminal Island, Judo instructors, celery farmers, rose gardeners, a YMCA leader, "Texas Mary" (the ornament of a Salinas saloon), wholesale produce merchants, a Baptist minister, research workers, butlers, lawyers, bums—some 117,000 Japanese-Americans from San Diego to Seattle followed a wide variety of occupations and pursuits.

At 7:55 A.M. on December 7, 1941, Pearl Harbor was attacked. Instantly the life of every one of these people became difficult. On January 2, 1942, Manila fell, and it became more difficult. Said the Los Angeles *Times*: "A viper is none the less a viper wherever the egg is hatched." On February 15, Singapore surrendered, and life became critical. Ten days later, when a Japanese submarine shelled Santa Barbara, the limit was reached. The Japanese on the coast had to go inland to special camps and were held under observation by the government to forestall mob violence. On March 18, President Roosevelt created the War Relocation Authority to handle the mass evacuation.

Poston, Arizona, sits in the burning desert near an old mining town. In summer the temperature sometimes climbs above 120° in the shade. This was the site selected for one of the evacuation camps. Here, as the spring of 1942 progressed and the sun mounted higher, 9,000 Japanese men, women, and children were assembled in a new community. The government did not plan to punish them for what had been done at Pearl Harbor, nor was the idea to pamper them. They were to be as self-sufficient as possible, to earn a little by raising some crops for the outside market, and to live a very simple life in Army barracks on the hot desert floor.

Land was to be cleared, food to be grown, various projects to

be organized, including a community store, a hospital, public health work, mess halls, churches, schools, a fire and police department, a library, adult education, and a camp newspaper. Also there was a good plan for self-government, but it was not put into effect until after the strike. Many of the other services were also on paper for months, notably some important equipment for the hospital. This was not due to government negligence so much as to the monstrous demand for supplies at all the war fronts. Poston naturally was not at the head of the waiting list.

In the camp were three well-marked classes of Japanese. The *Issei*, who had been born in Japan and could never become American citizens. The *Nisei*, born in the United States and *ipso facto* citizens, mostly children of *Issei*. The *Kibei*, who were *Niseis* that had gone to Japan from America, and subsequently returned. Many of the *Isseis*, after being treated like lepers on the coast, wanted Japan to win the war, though they did nothing overt about it. Most of the *Niseis*, however, despite the treatment they received, remained loyal to America. In complete disregard of these classes, demagogues in the Far West repeatedly made headlines by whipping up agitation against *all* people of Japanese descent, proclaiming that "a Jap is a Jap," and none can be trusted.

Meanwhile, the administration of the camp was split into two kinds of staff members, called by Leighton "people-minded," and "stereotype-minded." The former were full of good will, which was fine; but some of them tried to operate on the blanket assumption that "we're all human beings"—which was not so fine. We *are* human beings, right enough, *but our cultures are different,* and if this crucial fact is ignored serious difficulties are likely to result.

The stereotype-minded were at the other extreme. They looked on their charges as "Japs" first and people second—if indeed they were not to be classed among the higher apes. Their motivations were alleged to be entirely different from those of "white men." The stereotype-minded thought the Center ought to be an out-and-out concentration camp. Since they were thinking of their stereotypes rather than of actual people, they gave no administrative attention to incentives, but relied on punishment and fear. Shoot a few Japs and the rest would come around, was the general idea—"the only treatment the yellow bastards will understand."

This attitude was held by the least educated of the staff, and the least informed about the reasons for the Center. One of the top officials, a man of fifty, "honest, forthright, and inflexible," came from the deep South. We will call him Mr. Z. He had no difficulty in transferring to the Japanese his whole mental apparatus about Negroes—a lower order of being to be kept in its place.

The hot months dragged on. The divided policy of the administration, serious shortages in many promised supplies, the unknown future, all combined to develop among the people of the community various acute needs—physical, social, psychological. The needs were related to a fundamental feeling of insecurity. The prime task of the administration was to discover those needs and meet them, not in order to give in to public clamor, but to keep the community from disintegration.

Right here is an acute test for the administrator. He should know that strong fear inside a group is likely to lead to strong anger, which in turn may lead to aggression and violence. The people at the Center had plenty to fear. They had no worthy status, no sense of belonging, no idea what was going to happen to them. They had lost most of their property, and had nothing to hope for.

There were many subgroups, as well as the *Isseis, Niseis,* and *Kibeis.* First came family groups, who were required to share the same quarters—a fortunate requirement as it turned out. Then there were remnants of business associations, farmers' associations, fraternities, athletic clubs, gambling syndicates, people from the same town in California, and so on. Under stress the family held together the best of all.

A council had been set up by the administration for inaugurating local self-government, but it did little and, as the people progressively lost hope, it became the target for their grievances. There was no real integration, no rank and file leadership in the whole camp. Toward the end of the summer, neighborhood groups began to form spontaneously, with each "block" of fourteen barracks as a political and social unit. The "good of Poston" was too nebulous an incentive, but many members began to pick cotton in earnest when it was known that the proceeds would be used to improve their blocks.

As in all human communities, members varied from responsible upright citizens to noncooperators full of hate and bile. Within somewhat narrower limits, so did members of the staff vary. The degree of cooperation and responsibility was also affected by government policy at Washington. Abrupt changes and reversals of policy bewildered people and hurt morale.

By October, 1942, it was clear that the struggle to build a going community had been lost. The Center was visibly disintegrating. Dire things were in the wind. It was cool in the evenings now, and people stood on the streets around the fires which they had built against the chill, accumulating their grievances, past and present. They spoke bitterly of the poor food, the terrible heat of the preceding summer, the hospital equipment which had never come, the mosquitos, the wretched pay of fifty cents a day.

Around the fires at night, rumors began to spread—ugly rumors, stupid rumors, incredible rumors. Premonitions and prophecies were more and more heard. Ouija boards were brought out. Crackpots, demagogues, trouble makers, had a receptive audience around the fires. Gangsters were not only tolerated but admired as men who got action. . . . Action!

The administrators consulted Leighton, and he sought to interpret what was happening. People, he said, were trying to adjust to a society that had no framework and no stability. They were trying somehow to exist without security or hope.

By the middle of November, their customary inhibitions against aggression and violence were exhausted. Meanwhile, small lumps of new social organization, the nucleus of a new structure, were appearing in the fluid confusion. The lack of harmony was almost unbearable. When would the little bonfires turn into one great conflagration?

During the night of November 14, a thirty-year-old *Kibei*, a rice broker and reputed swindler of Japanese farmers, was attacked in his sleep in the bachelors' barracks and beaten almost to death. Fifty suspects were rounded up, and two of them held for further investigation by the FBI. Both were *Kibeis*, one a former student at the University of Southern California, the other a Judo instructor; both were popular with the people.

Their families promptly tried to obtain their release. A meeting was held in the block where the two men lived, and a delegation

was appointed to see the project director. The director said that the FBI had the matter in hand, and he could not interfere with the investigation.

Then a curious thing happened. The handful of people who threatened trouble unless the men were released suddenly became the catalyst which exploded the frustrations and grievances of the whole camp. There was a spontaneous walk-out—not so much on behalf of the prisoners, as on behalf of long accumulated resentments and hopelessness. As one striker said: "I didn't know what the issues were and I don't imagine anyone else did either—there were so many conflicting issues. Everyone took up the torch in defense of his particular peeve."

The strike at Poston was planned by a few hotheads, relying on group support. Explosive tensions were all about, ready to go off. On Thursday, the nineteenth of November, a body representing the residents of Unit I declared a general strike—no more work by anybody except for bare essentials.

The administration was on the spot. Should they call in the Army and quell the strike with force? This would probably involve bloodshed. Many of the strikers were offering to die for their cause, while the Army unit outside the gates, mostly raw recruits, was abnormally excited and eager to charge in. Should the administration try, on the other hand, to weather the crisis and use the emotional energy the crisis released to build a better community in the future? Certainly if the Army came in shooting, the hope of anything better than a straight concentration camp was forever gone. The Berlin and Tokyo broadcasters would have a splendid time equating that with the Four Freedoms! Some administrators could not forget that the majority of the people at the Center were *American citizens*, American born, whose loyalty had never been disproved.

When the strike was called, the staff cracked through the middle. To the stereotype-minded, the matter was simple. Mr. Z had his formula ready: The Japs (considered all to be identical) were raising hell, and it was the duty of good Americans to go in there, slap them down, and put them in their places. If this involved shooting irons, it involved shooting irons. The whole disturbance was the result of previous coddling and lack of discipline.

Mr. Z had followers, though not all so outspoken. Some of the staff saw the situation in pure Hollywood colors, with plots, secret agents, Axis machinations, buried food supplies for invading armies, all complete. The melodrama mind, Leighton says, was exceedingly dangerous at this juncture. It was primarily a product of fear; but "out of the figments of the mind springs actual catastrophe." Thus the top administration had to deal not only with tension in the community it was trying to govern, but with emotional breakdown in its own ranks.

On the other side were the "people-minded" staff members, some of them sentimental, some of them realists. They canvassed the alternatives. Breaking up the crowd, which was milling around the jail where the two suspects were held, would not halt the strike. There was no way the Army, if it took over, could force residents to work. Frustrations and grievances would be driven underground, only to become worse. . . . So the "people-minded" reasoned.

No one, however, not even the most tender-hearted of the staff, entertained for a moment the idea of letting the prisoners go free, as the turbulent crowd demanded. "Face seems to be important in all societies. . . . Orientals have no monopoly." The alternative to summoning the Army was some kind of negotiation which tacitly implied that the people of the community had a case. The people by this time were represented by a so-called Emergency Council, mostly elder *Isseis*.

The project director was attending an important conference outside the state and could not, at this critical juncture, be reached. We cannot envy the assistant director, who, after a stormy staff meeting between these two schools of thought, stood looking out the window at the gray November desert, trying to decide what to do. If he said "yes" and let the Army take over, he had a perfect escape for himself, but the Center as a community was finished. If he said "no," perhaps the mob would go on the rampage, looting and burning, as Mr. Z so grimly and confidently prophesied. After a long time he turned back from the window and said "no." He would ask the Army to establish patrols *outside* the area, but not to take charge of the camp.

Every administrator, Leighton remarks, must be prepared when the time comes to back himself against the world, and if

necessary take the consequences of losing. It is no field for the faint of heart. True, the moment does arrive when the administrator stands alone, but how much better, when that time comes, to be backed by knowledge!

For a few hours it was touch and go, but his decision turned out to be the right one. When the people of Poston felt that the administration was ready to negotiate in good faith, when their new Emergency Council was recognized, the hotheads lost their following. The extreme demands collapsed and a compromise was found. One of the prisoners charged with the beating was released outright after the FBI concluded its investigation. The other, the Judo instructor, was paroled pending examination by the regular civil courts of Arizona. Subsequently the case was dropped because of insufficient evidence.

The strike ended on Tuesday the twenty-fourth with a mass meeting in front of the jail. It was a cold night and the fires were all burning. Speakers praised the work of the Emergency Council, the law and order which it had maintained during the strike, the bright future now before Poston as a self-governing community. The director, recently returned, made a warming speech. The strike was nobody's fault, he said, "We're just all people together. It's not the administration up there and you people down here, but we're all working together." The meeting concluded with three *banzais* and the crowd went quietly away, its tensions marvelously relaxed. In some quarters there was even a feeling of jubilation, of liking everybody, including the administration. The fires were put out; the rubbish was cleared away, leaving the ground clean, swept, well trodden, and, for the first time in a week, bare.

The crisis and its settlement had focused attention on those fundamental *needs* of the community "on behalf of which the strike had been only an imperious cry for attention." Adjustments were made, self-government developed out of the Emergency Council, and a sounder community with real indigenous leadership was born. Although other troubles arose from time to time thereafter, no more strikes and no more mass frustrations developed in Poston. The residents felt more secure; they began to hope again. Today, of course, many are back in their homes on the coast.

Lessons from the crisis

Leighton's story of the strike, dramatic as it is, is only the prelude to something more important—the observations and conclusions which went into his notebook as a social scientist. Some will impress you as simple common sense, but others are clearly exploring new areas in human relations. "I am certain that in the Relocation Camp experience, my hands groping blindly below the surface, touched here and there on a real body of constants and laws in human living."

He begins the analysis with two constants which we have already encountered:

Principle 1. In all the different peoples of the world there are universal basic characteristics inherent in human nature.

Principle 2. There are profound differences in belief, sentiment, habit, and custom among the various communities, tribes, and nations which make up humankind.

These two linked principles summarize the culture concept. They are accepted, says Leighton, by practically all modern scientists who have seriously studied the nature of man and his society. The more naïve of the people-minded administrators at the camp accepted the first but were not sufficiently aware of the second. The stereotype-minded, noting the second, denied the first. So both groups missed the mark, though Mr. Z and the "shoot-'em-down" contingent were the farthest off.

> All men, everywhere, face the same life tasks, share the same anxieties and perplexities, bereavements and tragedies, seek the same goals in their cultures: to make life meaningful and significant, to find some security, to achieve some social order and to regulate their conduct toward values that make life more than organic existence.

This quotation from Lawrence K. Frank eloquently states the only frame of reference in which the tensions at Poston could be intelligently studied. The strike again demonstrated the principle that aggression is not so much a result of innate cussedness as it is one of the ways in which all of us tend to react under stress.

A list of principles

Dr. Leighton advances various principles and recommendations for administrators. Here are a few of them:

Do not think of people as racial, national, or class stereotypes. Get up close and look at them, particularly at the children.

Think of human similarities before you think of human differences.

Group stability is helped by situations which convey a sense of economic security; by work which is thought to be useful and important and thus contributes prestige; by outlets in sports and recreation; by the opportunity to read and learn.

Most individuals, most of the time, prefer peace and quiet. The administrator can always count on this law of inertia. He can count on a sense of humor. He can count on the relatively long time it takes for aggressive feelings to rise to the point of violence. In Poston it took almost six months.

Following an outbreak of aggressive action, people have a sense of relief and well-being, of liking everyone. *This is the worst possible moment to deal out punishment.*

If the administrator uses punishments he must also use rewards, or offend a deep-seated sense of justice common to all human communities.

Never dismiss complaints as trivial; they may be storm signals.

The test of administration is ability to meet the needs of the people *in that situation.* When needs are not met, tension begins.

Try to control aggression, but never try to stamp it out. You will only make it worse. Get at the roots.

Never make threats or pass laws you cannot enforce. Never take a strong stand on a weak position. This sounds a little like "don't kiss a buzz saw," but administrators and legislators do it again and again. Never use a little force when a strong one is required—in brief, beware of "too little and too late."

Always keep the communication line open, both from the administration down to the group, and from the group up to the administration.

Remember that your own staff is composed of human beings, too, reacting in similar ways to the people being bossed. (The recent foremen's strikes in US industry may be explained on this principle.)

Every human group requires a social organization and a system of belief. Groups cannot effectively carry out acts for which they have no system of belief. Leighton quotes Elton Mayo about the

troubles that arise in modern factories when workers do not understand their work situation. What they are doing often makes no sense to them, and no amount of take-home pay can compensate for this.

All measures for relieving stress in a group must be applied in accordance with *prevailing belief systems* or nothing will be accomplished.

Belief systems can be influenced by contact with other systems, by new opportunities for achieving security, by reason—at least sometimes, and by forces of stress.

All people everywhere create social organizations, but this takes time. Very recent immigrants are thus at a great disadvantage. Human groups cannot carry out actions for which they have no social organization, any more than you can drive a nail without a hammer.

A sure warning of breakdown in social organization is a rise in rumor and superstition.

Passing a law by itself never creates a social organization.

Finally, if he finds he cannot control his prejudices, the administrator had better get into another line of work.

People overstrained

When an administrator, his ear to the ground, sees that the group under him is definitely under tension with pressures rising toward ultimate violence, what remedies can he apply? Mr. Leighton presents us with many suggestions, as the list shows. Briefly, as I study the record, it comes down to this:

Get rid of every last prejudice that you can from your own mind. Forget about "yellow bastards," "trouble makers," "base ingratitude," and try to understand the situation with all your senses alert. In choosing remedies, always remember that the cultural slate can never be wiped clean. You have to administer remedies *in terms of the belief systems* of the people you are dealing with. This is where most reformers and idealists go wrong.

Remedies for tension should be planned in stages over a period of time. Communicate every change to the people affected *before it hits them,* so that they can get ready for it. Deal wherever possible with the real structural leaders of the group (a structural leader is one who has followers), not with paper leaders, and above all,

not with your own stooges. People must feel a motive in themselves for your changes if they are to be effective.

Remember that human beings are not much moved by rational appeals when under stress. You must accept this, and not blame people for "being unreasonable." You must expect them to be unreasonable at such a time. Man is not primarily a logical animal, as we observed earlier. Communication and education are your best tools. You must be tireless in arranging two-way communication lines—grievance machinery, suggestion boxes, and interviewing techniques for the people to let off steam.

Knowledge versus hunches

A modern administrator cannot hope to go far on pure hunch. He should have access to scientific knowledge and use it freely. Leighton's book is a noteworthy contribution to those who govern. The administrator must continually test hypotheses, but he must avoid irresponsible experimentation. There is too much dynamite in a group, and an explosion can bury the boss in the ruins. In the last analysis, he is boss only by sufferance of the community.

When Leighton and his associates came to Poston, the administration was making decisions off the cuff after informal staff conferences. The communication lines were not good in either direction. After he had collected sufficient firsthand information, he began to tell the top managers about it—to their apparent astonishment. "We thus became aware of what would seem to be a basic principle in the application of social science to a fast-moving administration program, namely, that the research staff have direct access to policy-makers, and participation in policy meetings."

When the strike erupted in November, Leighton and his group were in constant attendance during the critical hours. They did not make the final decision; the man at the window did that. But they put the major characteristics of the situation before him, so that he could decide on the basis of understanding instead of passion. Mr. Z supplied the passion. In these two men do we see two worlds, the one we have known, and the one which may come?

The decision worked. It gave the right solution to a very difficult problem. This exact solution will not fit every problem of

group tension. But the experiment at Poston reveals a technique and a body of principles which no administrator anywhere on earth, whether he runs a continent or corner grocery store, can afford to overlook.

Alexander Leighton shows us what social scientists can do when they are given a real chance. He shows us, too, a happy combination of observation, theory, and practical application. Enough work like this and we will begin to know something about controlling the bombs of human nature. Then we need not fear so much the bombs the physicists make.

CHAPTER 10

Scientists Look at Race

THE Mufti of Jaffa brought his daughter to the first aid station of Red Mogen David, Palestine's Red Cross, in 1947 for a blood transfusion. After it was given, he asked for the bill. "We serve all the people of the Holy Land without distinction as to race or creed," he was told. "We do not sell Jewish blood."

The Japanese-Americans at Poston, despite their color, behaved the way any human community would behave under severe stress. As we follow Leighton's account, we almost forget the racial differences. To Mr. Z, however, these were paramount. But the scientist prevented an explosion by treating the situation as a problem in group tension common to all human beings, "without distinction of race or creed."

Race prejudice is a cultural phenomenon. One is not born with it; it has to be learned. Perhaps half the world today has not learned it at all. It has come to our Western culture in relatively recent times, a modern form of the age-old suspicion of the outgroup, the foreigner, the person who is different. Religious prejudice has declined in the West as race prejudice has increased.

In the ideal community nobody would need to instruct children about the races, or warn them against prejudice. The adult would act without bias, and the children would automatically follow. But in George Rutherford Adams' New England, as well as below the Mason and Dixon Line, the pattern of prejudice is established, sometimes stronger, sometimes weaker. The children see the snub, feel the antipathy, hear the derogation, and presently they are locked into the pattern too, ready to pass it on to *their* children.

The biology of race

The story of Adam and Eve in the book of Genesis has been vindicated, in part at least, by science. Its main point is now generally accepted as true: namely, that there is only one human family. All two billion of us now alive are the descendants of a comparatively small group of common ancestors. In Genesis, the dates are wrong, and we find quite a few poetic trimmings, but the idea is sound. If each of us could trace his family tree back for enough generations, we should all find the same great, great, great . . . grandfather.

Our most remote forebear, according to Linton, was probably a small tree-dweller, ancestral to both men and apes. Succeeding generations became larger, with relatively bigger brains. During the Miocene Age, some members became too large for trees and took to the ground, still on all fours. These ground-dwellers gradually developed carnivorous habits and began to stand erect. Their brains grew still bigger. In the latter half of the Pliocene, one branch reached the human level, but in the form of a very primitive gentleman indeed. He gave rise to a number of species, one of which finally developed into modern man. Language probably began then. This species exterminated its competitors, overran the earth, and in due course began to differentiate into the various races which we know today—brown, yellow, and white.

If we could ever piece together the story of how a small group, starting probably in Central Asia, gradually spread around the whole globe, it would dwarf all migrations in human history! The American conquest of the West would seem like an afternoon stroll in comparison. How did these remote ancestors of ours get over to Japan, to the Philippines, across the watery wastes of the Pacific to one island after another? How did they make their way from the mouth of the Nile down to the Cape of Good Hope? What was their rate—a hundred miles a year, or ten miles a century?

Even more astonishing, after crossing Bering Strait, how did they get to Tierra del Fuego, 10,000 miles away, over some of the most savage territory on the planet? How did they get to Australia, and why was that continent then sealed off for 20,000 years, leaving the people there culturally frozen in the Old Stone Age?

Did an easier route exist, perhaps on islands later swallowed by the Pacific?

It has taken scientific teamwork of a high order to get the facts of race together. The *historians* have studied recorded migrations, the *sociologists* have studied group organizations, the *biologists* have studied anatomy and genetics; some *anthropologists* have studied culture, and others have taken many measurements of skulls; the *psychologists* have studied intelligence. Their joint findings have been checked and cross-checked, to the over-all conclusion that " all the peoples of the earth are a single family with a common origin."[1]

Take, for instance, the human foot. All human feet have practically the same structure. When you list all the little bones and muscles and joints, it is clearly impossible for this combination to have arisen twice in two independent species. All humans have the same tooth and jaw structure. They are capable of similar physical tasks—plowing, running, striking, lifting. They are capable of similar mental tasks—acquiring a language, counting, remembering, abstracting, using logic, argument, persuasion. They all gather into bands and groups, and develop cultures which contain many parallel patterns and universals, as we have seen.

Scientists find that the only demonstrable *racial differences,* which are over and above individual differences, are in a few nonessential bodily characteristics—the texture of head hair, the shape of the nose, eye color, skin color. White people are the hairiest, perhaps because most of them live in colder latitudes. Negroes have the darkest skin color, certainly because this gives them protection against the rays of the tropic sun. All races have some primitive and other less primitive characteristics. The thin lips of the white man, for instance, are nearer those of the ape, while the thick lips of the Negro are further away from the ape.

Skin color is determined by two chemicals, *carotene,* which gives a yellow tinge, and *melanin,* which gives a brown. These colors, combined with the pinkish tinge from blood vessels showing through, provide all the skin shades known. Every human being has some of each—unless he is an albino, which means he

[1] *The Races of Mankind.* Benedict and Weltfish. Public Affairs Pamphlet No. 85, 1943. A good short survey of racial facts. We shall follow it in the next few pages. It stems from Boas' *Mind of Primitive Man.*

lacks *carotene* and *melanin* completely. Albinos are found in all races. "It is not an all-or-nothing difference," says Ruth Benedict, "it is a difference in proportion. Your skin color is due to the amount of these chemicals present in your skin."

Height is no reliable characteristic of race. The Shilluk Negroes, near the sources of the Nile, average 6 feet 2 inches, while not far away are the brown pygmies, who average 4 feet 8 inches.

Head shape is similarly unhelpful. In West Africa we find long heads, but along the Congo round heads. American Indians are both long-headed and round-headed. In Asia Minor, where human mixtures rise to a kind of frenzy, there are long heads and round heads among close relatives.

Blood differences are nonexistent between the races, as the Palestine Red Cross demonstrated. No chemist can tell from a blood sample to what race its donor belongs. He can tell whether it is type O, A, B, or AB; but these blood types are found in *all* races. Your son and an Australian bushfellow may both be type AB, while your type may differ from your father's.

Differences in the size of the human brain today tell us little about race, nothing about intelligence. The world's largest brain belongs to an imbecile. Some geniuses have relatively small brains. As in the case of a blood sample, no scientist can tell by examining a brain alone to what race the owner belonged. The average brain size in cubic centimeters differs slightly by races, but it has not been proved that this affects intelligence until the variation becomes much greater. Back of Neanderthal man, differences in brain size are important. To measure intelligence we have developed in America the IQ test. Top scores are made by Negro, Indian, Mexican, and Japanese children, as well as by white children.

All races can interbreed everywhere, and with remarkable industry have done so. Your typical European is a wonderful mixture of Slav, Mongol, African, Celt, Saxon, Teuton, Semite, and other strains. "So far as we know there are no immutable laws of nature that make racial mixture harmful." We have a picture in our minds of the Scandinavian people as predominantly tall, blue-eyed blonds, with long heads and long faces. Yet if you took out your notebook in Stockholm, let us say, you would find that only about 15 percent of them fit this description.

All races, except the Australian bushfellows, have developed high civilizations from time to time. There were Negro empires and states in Africa when large sections of Europe were sunk in barbarism. The people of China were reading Lao Tze when the original Britons were painting their bodies blue and yelling in the fens. The Maya Indians were better astronomers and sculptors than their Spanish conquerors.

The "character" of the different races turns out as we might expect to be a result of culture, not biology. American Indians in the pueblos of New Mexico were placid, peace-loving, and unemotional, while in the horse culture of the plains, Indians of the same stock were "frenzy-loving Dionysian warriors."

The three primary races—the Caucasian, Mongoloid, and Negroid—exhibit no significant difference to date in height, weight, anatomy, blood, intelligence, or character. They all have the same normal temperature of 98.6° F, the same life span under similar conditions, the same muscular prowess. All are vulnerable to certain diseases and cured by similar methods. Everywhere they readily interbreed. Individuals within each race, of course, differ profoundly, and subgroups differ in certain characteristics, like the Negro giants and pygmies.

Most white Americans, even if they have very little prejudice, think Negroes are inferior intellectually, "like children." Otto Klineberg, in his *Characteristics of the American Negro*, finds no proof of fundamental, inherited intellectual differences between whites and Negroes. But "there is also no complete demonstration that the groups are entirely alike. If other methods were available, differences might conceivably be demonstrated (although this is unlikely). In the absence of such methods it is legitimate to conclude that in all probability inherent intellectual differences between Negroes and whites do not exist."

This is a careful scientific statement, and probably goes for all races, with the possible exception of the Australian bushfellow. The "childlike" characteristic, when it is really there, is cultural, not inherited. If your culture expects you to be "childlike," and treats you as a child, your role is assigned.

Nonbiological "races"

Many other "races" are identified verbally, argued about, and fought over. On analysis, however, most of them turn out to be

national or religious groups, with little or no biological distinguishability. "Aryans" are properly people who speak languages derived from the Aryan language group. "Jews" are properly people who subscribe to the Hebrew religion, and practice certain ceremonies like the Seder on Passover. The so-called "Jewish type," with hooked nose and black hair, is a Mediterranean variation of the Caucasian race covering many Arabs, Armenians, Turks, Levantines, Greeks, and South Italians as well as Jews.

Hitler and his trained-seal biologists got into some weird difficulties with their "Aryan" concepts. The Hungarians were obviously not members of the master race, but when they joined the Axis, they had to be accommodated somehow under the main tent. The solution was to call them "non-non-Aryans." The Arabs and the Japanese presented further semantic complications. In due time the savants in Berlin became so involved in this racial mythology that they had to assert that the Jews, far from being simple "non-Aryans," did not belong to any race at all, but formed a mongrel community thenceforth to be called "Anti-Race."

"A plotting of racial characteristics," says Linton, "on the basis of their degrees of evolutionary advance, shows such an uneven balance between the various races and breeds, that we are forced to conclude that all of them stand at about equal distances from their common ancestor." Perhaps the real reason for the domination of Europeans over the so-called backward races is reflected in the following couplet:

> Whatever happens, we have got
> The Maxim gun and they have not.

Race as a system of belief

The loose inaccuracy of most talk about racial differences becomes apparent the moment one turns to the evidence scientists have accumulated in the past generation or two. Neither science nor the book of Genesis has had much effect, however. The Christian ethic of the brotherhood of man, as well as the story of Adam and Eve, turns out to be substantially in line with the latest findings in blood chemistry—*but the word does not get around*. What is the trouble?

A *Fortune* survey in 1939 showed majorities, up to 76 percent of Americans, believing that the intellectual inferiority of Negroes

was inborn. Thus while real biological differences are slight, believed-in differences are transcendent. "Race, so to speak," says Robert Redfield, "is a human invention." It is not to be found in the blood count, but it has an enormous place in the culture. We have gone far enough in our exploration of social science to know what that means. It means an intangible force against which argument has either no effect or a boomerang effect.

When a white tenant farmer south of the Mason and Dixon Line joins a posse to keep Negroes "in their place," he is not necessarily either a brute or an enemy of society. He is following the accepted customs of the tribe, doing what he has been brought up to do. To him it is right and proper that Negroes should give way to whites. This he began to learn almost before he could walk. George Rutherford Adams learned it, too, but less tenaciously, and so he joins no posses.

In the deep South—for reasons too complicated to go into here, but partly tied up with the frustrations of the War between the States—a caste system has been developed almost as rigorous as that of India. There it is religion, here it is race, which determines rank. To change it suddenly would be as profoundly shocking to Southerners as the sudden elimination of Brahmins would be to Indians. Indeed, it would be more than shocking, it would probably tear the community asunder: wrong would become right, right would become wrong, nothing would make sense, and 50 million Americans, white and black, would, one fears, go over that last line of control which the Japanese at Poston missed by a fraction.

Perhaps the only way to modify a caste system in a culture where it has been established is to change beliefs in people's minds. That is not done overnight. It probably can never be done solely by appeals to reason and justice, or by reading the Bill of Rights in public parks.

How to improve race relations

It is important, according to Donald Young, Charles Dollard, and other social scientists, to understand the cardinal distinction between race *prejudice* and *discrimination*. Prejudice is a culture pattern not susceptible to frontal attack, and not to be reasoned about except within narrow limits. Discrimination, on the other

hand, is a specific, material thing, like keeping Negroes out of washrooms, restaurants, or schools, and making them ride in the rear seats of buses.

Discrimination can be attacked, particularly in a country where democratic traditions in other respects are strong. A specific Jim Crow practice can be selected for attack, and if the strategy is well devised, the discrimination can be, and has been, eliminated. Negroes are now being admitted into some colleges in the South for the first time. As the discrimination is reduced, says Dr. Young, there is in turn an inevitable reduction in prejudice. It comes, furthermore, the best way, by use and wont rather than by arguments and propaganda. "If the do-gooders in race relations would waste less time fretting about prejudice and devote their efforts to the reduction of specific, vulnerable cases of discrimination, real progress could be made."

Branch Rickey, manager of the Brooklyn baseball team, affectionately known as "dem bums," has shown the way. He put Jackie Robinson, a Negro, on first base in 1947 for the first time in big league history, and backed him to the limit. It took supreme tact on Robinson's part to survive the first two or three months and avoid a fight with some of the players born in the South, but by August he was an accepted institution, batting, fielding, and especially base running with great brilliance. Other Negroes were then signed by the Cleveland club and the St. Louis *Browns*.

John Chamberlain asked Rickey if he had fought for his first baseman to solve a sociological problem. "No," said Rickey, "I brought him up for one reason: to win the pennant! I'd play an elephant with pink horns if he could win the pennant."

This brings up the whole question of social engineering for bettering race relations. We will concentrate on the Negro problem in America, but the implications are world-wide. Most intelligent Southerners sincerely desire to see race relations improved, though it is doubtful if a majority vote of whites in the deep South would endorse any change in the caste system, of which Jim Crow segregation is a distinguishing mark. What methods are available in this direction? Leighton's book about Poston provides important suggestions, and Young in a recent monograph has offered more.

Suppose the mayor of a city wants to guard against a race riot;

suppose the president of a big steel company wants to introduce Negro workers into his mill; suppose a labor leader wants to persuade the rank and file to accept Negroes into the union? He should consult an expert. Race trouble always takes place at *some point* in the social structure—on a bus, at a factory gate, on a housing project, in a school. The social engineer studies these points and consults the growing literature about them. In 1942 John A. Davis wrote a pamphlet on how management could integrate Negroes into war industries. A War Department manual for white officers who were to lead Negro soldiers in World War II was prepared by a team of sociologists, psychologists, and anthropologists. The Navy published a similar manual. The National Educational Association issues a yearbook on how to handle the problem in public schools. Police handbooks are in use which analyze the events and tensions which have led up to race riots, and which serve to alert police officers stationed in parts of the city where Negro and white communities merge—often a danger zone. Such technical studies are worth tons of leaflets and manifestos about the injustices practiced on our brown brothers.

The techniques recommended by Dr. Young are similar to those which reduce any other group tension and hostility—in a labor union, a Japanese relocation center, an Army barracks. "The assumption that problems of Negro-white adjustment are somehow generically unique, is practically certain to be fatal to cooperation, since it implies belief in some kind of racial dogma." Note how Leighton followed this advice at Poston, using *general* human principles, not white-yellow principles.

Exploded beliefs about race

We used to think that special Negro health programs had to be designed because Negroes were considered more susceptible, biologically, to tuberculosis and other diseases. Scientists have proved this false. Like everybody else, Negroes are susceptible to bad housing, bad sanitation, and bad food. It is such conditions, not *melanin*, which promote tuberculosis.

We used to think that the "Negro mind" could not aspire to much education above a vocational course, hence schools like Tuskegee and Hampton. Now we know that to be a false limitation. Negro education should follow the regular American educa-

tional pattern, varying with individuals and economic opportunity, not with race.

We used to think that the poor Negro was particularly susceptible to delinquency and crime. His moral brakes were considered weak, and he just could not help himself when temptation crossed his path. Now we know that his brakes are as well lined as anybody else's, and that the trouble is cultural, not racial. If Negroes have a high crime rate, the social scientist investigates the slums in which they were reared, and what kind of emotional security they got as children.

We used to think that Negroes were gifted with a special sense of song, rhythm, and dance. Now we know they are no more innately musical than the inhabitants of Aroostook County, Maine. If Negro children, or white children, are brought up to sing and stamp their feet, they will sing and stamp their feet. Many Negroes are good at blues, but no better than Harry James or Eddy Duchin.

Young believes that both derogatory stereotypes (big, black, buck nigger), and sentimental stereotypes (Aunt Jemima with her pancakes) are bad for race relations. Pointing up Joe Louis as representing a special race of super athletes is very bad. "Such credits imply a biological theory of race differences just as surely as do unfavorable stereotypes." The reaction to the brilliant scientific career of George Washington Carver should be "Why not?" rather than the more general "Who would have thought it possible?"

Interracial tactics should be designed—we are still considering engineering—to let whites and Negroes become more and more used to each other along Main Street. People should grow more accustomed to seeing Negroes in stores, hotels, trains, parks, theatres, buses, and other public places, acting just like anybody else. Now we are seeing them at first base!

It is bad tactics, says Young, to suppress news unfavorable to Negroes. Twisting statistics to show their achievements is not good engineering. The unvarnished truth will be found a more effective agent in the slow process of cultural change than any amount of specially slanted stories. Negroes are no worse, *and no better*, than the rest of us. Born not far from George Rutherford Adams, I never solved the race problem for myself until

I began to look at Negroes the way I looked at dark Italians or blond Scandinavians—different complexions from mine, otherwise *people*; not to be pitied or fussed over any more than Tony the fruit dealer or Greta Garbo.

Harping on conflict and injustice can be very harmful. How long did liberals in the North contribute to the defense of the Scottsboro boys, and how long did the people of the South bitterly resent it? Such publicity deepens bitterness. The right to protest injustice must be maintained, but to indict a whole region for injustice, day in and day out, is to challenge retaliation. It is clear to every sensible observer that the Communists' campaign to raise a black rebellion in the South is a perfect formula for putting the clock back to carpetbagging days. Fewer people realize that harping on "incidents" has a similar, if less violent, effect. One of the stupidest things to do is to send agitators from the North down to protest an incident in the South. There is good reason to believe that Bilbo won his last election to the Senate because many Mississippi voters hated Damyanks interfering in their affairs even more than they disliked Bilbo.

Shooting blind

There are 123 national organizations working on race relations today, not counting federal agencies. Most of them lack the faintest idea of the effects of their propaganda. They send out leaflets and broadcasts and hope for the best. "The dearth of appropriate research and consequent lack of a proven base for action is one of the most conspicuous features of existing intergroup programs," says Robin M. Williams, Jr. How much good will and how much good money is wasted on projects that ignore the known laws of human relations? How much of it boomerangs, to make a bad condition worse?

Race prejudice involves a prejudgment of individuals on the basis of a stereotype—a "Jap is a Jap," a "Nigger is a Nigger,"—Mr. Z's trouble at Poston. It involves also a set of evaluations. A prejudiced individual brings to the issue certain beliefs about traits in others, favorable or unfavorable. It is interesting to note that an unfavorable prejudgment does not always rate the victim as inferior. In anti-Semitism there is reason to suppose that the stereotype is sometimes the other way around—"the Jews are too damn smart."

Assuming that we really want to change belief systems about race, it is encouraging to remember that Western civilization carried even more severe beliefs about religious differences three hundred years ago. Thousands of innocent people, including harmless old ladies, were hanged, burned, and beheaded. Religious wars and witchhunts raged for centuries—the way they are raging in India today. We got over that in the West—at least the more violent aspects—without help from social scientists. Perhaps with their assistance we can get over this affliction a little faster.

CHAPTER 11

Some Laws of Social Change

FOR three days after Hiroshima, newspaper men approached many physicists, chemists, and zoologists in the University of Chicago with the question: "What does this mean to society?" Only at the end of the third day did it occur to one of the reporters that he might ask a social scientist. The moral needs no pointing up. It is the chief reason why I am writing this book.

The social scientist whom the reporter finally consulted was William F. Ogburn of the department of sociology. It would be difficult to find a man better qualified to deal with the probable effects of new inventions. He is the major interpreter of the broad concept known as Social Change, which is an outgrowth of the whole culture concept in anthropology—the subject we have been pursuing for the past five chapters. For many years he has been running curves into the future based on how people have behaved in the past, and has arrived at certain general conclusions about both the curves and the behavior.

Dr. Ogburn, together with Franz Boas and W. I. Thomas, helped to establish a most important landmark in the history of social science about twenty-five years ago. They extended the culture concept into sociology, psychology, and other disciplines. Up to 1920 or so, most social scientists had been trying to explain the evolution of society by analogy with Darwin's theory, in terms of heredity, natural selection, and variation. The hypothesis was that social institutions progressed only as men's brains progressed. The modern white man in his morning coat was contrasted with the savage in his nose ring.

This was all very pleasing to white men, but there was a catch in it. As the years went by and better knowledge of genetics was developed, it became more and more difficult to explain how the human cortex could have progressed so rapidly. From a primitive sailing barge to the *Queen Mary* took fewer than 100 generations—a span too short to allow much change in a brain case or in the genes. The hypothesis was pretty well discredited by the facts of genetics.

How then *could* one account for the *Queen Mary*? Ogburn, pondering this question, measured the brain case in the skull of a Cro-Magnon man, who lived 12,000 years ago. He found that it contained as many cubic centimeters as that of modern man. More tests were made, and the fact was fully established that the brain size and the facial characteristics of the Stone Age men of France—who etched those dynamic buffalos on the walls of caves—were no more primitive than those of the faculty of any university you care to name.

Was the mind of Cro-Magnon man as powerful an instrument as our own? The evidence seemed to run in that direction. So scientists began searching for another hypothesis, and found it in the culture concept. The skyscrapers, the air fleets, and the *Queen Mary* can be accounted for by changes in the culture. Even if we hand down no more mental ability to our children today than our ancestors did 12,000 years ago, we do hand down the laws of thermodynamics, analytical geometry, and improved technical knowhow. Our children today have an enormous cultural accumulation to work with; all kinds of shoulders to stand on which Cro-Magnon children never knew. Alfred Korzybski has coined the term "time binding" for this process of accumulation.

The law of growth

When to this conclusion is added the demonstration that material culture grows according to exponential law—like compound interest—everything falls neatly into place. The theory of mental evolution can be discarded in favor of a theory which fits the facts more closely. Invention, exponential growth, and cultural adjustment account for the *Queen Mary* satisfactorily.

In Ice Age days the material culture transmitted from generation to generation was limited in amount, and changed very

slowly. Gradually new inventions in weapons, foods, clothing, equipment came into use and the rate of change increased. If the number of inventions from our Cro-Magnon ancestors to 1948 could be plotted on a chart the resulting curve would rise first slowly, then more and more steeply, approximating a compound interest curve.

What this rate means has been dramatized in the story of the farmer who brought his horse to be shod. The blacksmith said he would charge one cent for the first nail, two cents for the second nail, four cents for the third, and so on until the job was done. That seemed reasonable enough to the farmer, and he accepted the offer. But the farmer had not fooled around with exponential curves. For eight nails in each shoe, or 32 nails altogether, the bill came to just $42,949,672.95! (You may take your pencil and prove it—the way I did when I first heard the story.)

Ogburn has assembled a number of these curves, and they all point in the same general direction. He took Darmstaedter's ponderous record of inventions from 1450 to 1899 and plotted the number over time. He took the number of patents issued in the United States and Great Britain; he took various records of discoveries in physics and the other natural sciences. All show exponential rates of growth.

Harvey C. Lehman in a recent paper for the Social Science Research Council has carried on the analysis. He plotted contributions to chemistry, genetics, geology, mathematics, medicine, pathology, entomology, and botany for the past three or four centuries, on a 25-year time scale. They all show the typical compound interest curve. In chemistry, for instance, 688 contributions out of a total of 1616 noted since 1500 A.D. occur in the *last* 25-year period studied—1875 to 1900. There is no diminution in any of these subjects after 1900. Even contributions to subjects like economics, political science, education, philosophy, music, show similar curves. Dr. Lehman concludes: "with each succeeding interval, man's creative output . . . has tended to double in amount." The increase has been in the order, per unit of time, not of 1, 2, 3, 4, but of 1, 2, 4, 8—and what a difference, as the farmer found out.

The theory behind the graphs is that the larger the number of elements in material culture, the greater the number of inventions.

If 10,000 elements yield one invention, 100,000 elements may be expected to yield *more* than 10, for as the number of elements increases, the number of possible combinations increases at a greater rate. Three elements can be combined in four different ways, but four elements can be combined in ten different ways. (Try it with playing cards.) Therefore, as the number of inventions increases, technological change becomes faster and faster. Man can thus proceed from a damp cave to the Waldorf-Astoria on the exponential law without calling for any more cells in his brain or any increase in his intelligence.

Let us reverse the proposition. If H. G. Wells' time machine were in good working order, and if it could carry 1,000 babies from the brightest of modern parents to be reared by Cro-Magnon mothers, it is safe to say that they would not speed up culture or progress one iota. There just was not enough accumulation for them to work on in 10,000 B.C. We catch a glimpse of the same idea when we realize that even if Leonardo had evolved the laws of an airplane in flight, it could never have flown (except as a glider) because no engine had yet been invented light enough to power it.

Cultural lag

It is necessary at this point to distinguish clearly between: (1) Material inventions, (2) the human behavior resulting from the inventions, and (3) cultural institutions and systems of belief.

Inventions are usually accepted into the culture in two stages. To begin with, people change their day-by-day behavior to accommodate the new device. If it is a useful device, like radio broadcasting, this may happen fairly soon, a matter of ten or fifteen years. Americans are particularly spry at moving over and making room for new material inventions. Then, considerably later on, people change their institutions and belief systems to allow for the invention, and arrange means for controlling its effects in the interest of society. The time between the first and second stages is known as the *cultural lag,* a term invented by Ogburn. It is a vital part of the culture concept, and one of the most useful and important principles in all social science.

The invention of the steam engine made inanimate energy practicable in workshops and factories to run machines. There

was some opposition by hand workers, but not much. Because the tempo of the machine, not the tempo of the man, now dominated the process, industrial accidents inevitably became more frequent. In the United States, it took about 75 years before workmen's compensation laws were inaugurated to offset the accidents. Such laws ran counter to a belief system of pre-factory society, namely, that it was the workman's duty to look out for himself. And indeed when he had control of the process it *was* his duty. This particular cultural lag can be measured not only in years but also in the number of pauperized widows and maimed workers over the period.

The invention of the automobile was joyously accepted by nearly everyone but carriage makers. The cultural lag was relatively brief in America. Laws were passed almost immediately in an attempt to control its speed and direction. But the Amish community of Wayne County, Ohio, still forbids its members to use automobiles, as well as electric power, telephones, and tractors. In the Amish belief system these devices are inventions of the Devil, encouraging the sin of pride.

Andrew Yoder, a member of the community, was however confronted with a practical problem. He had to drive his baby daughter twice a week for treatment to a doctor who lived fifteen miles away. Andrew finally could stand the trip in a square-rigged horse and buggy no longer. He bought a car—only to be promptly ostracized by the community. He was still allowed to work but was deprived of social intercourse. His own brother would not eat with him. When out threshing he had to take his meals in barns and cellars alone. "It was like feeding a dog out of a dish-pan," he told a reporter from *Time*. No Amish cobbler would repair his shoes. The cultural lag against automobiles held firm in Wayne County, if not in the rest of the United States!

By and large, the motor car has brought at least as much fundamental change in the life of the American people as the horse did in the life of the Plains Indians, when they acquired it from the Spaniards in the sixteenth century. In such institutions as traffic courts, we are still trying to catch up with it.

Some of the most perplexing problems of the present time—mass unemployment, inadequate housing, economic insecurity—are really problems in cultural lag. We have the economic tools

available to solve many of them, but the community will not permit it. Congress votes them down, often with a complete sense of moral righteousness. Belief systems have not caught up with the facts. One of the most cruel illustrations of this is the full generation which elapsed between the first introduction of the child labor law and its final passage. Robert Lynd in *Knowledge for What?* lists other lags, as of 1940:

The ragged disparities in marriage and divorce laws among the several states.

The taboo against discussing venereal disease (now lifting in 1948).

The opposition of the American Medical Association to group medicine (still very firm).

The resistance of almost 90 per cent of the press to the social legislation of the 1930's.

The opposition of religious groups to birth control.

The gifts of Henry Ford

Henry Ford provides us with an excellent illustration of exponential growth and the cultural lag which accompanies it. He is largely responsible for one of the greatest changes in human behavior of all time. For his development of mass production in the automotive industry he is rated as a hero, not only by Americans, but even by Russians. But mass production on the Ford scale presented mankind with far graver problems than it solved. The conveyor belt enabled us to make things more rapidly, but it dumped in our laps the questions of the robot, overcentralization, Megalopolis, and mass neuroses. Mr. Ford fled from these problems into antiquarian hobbies—the antithesis of the conveyor. Peter Drucker has brilliantly summarized the paradox.

> Henry Ford was less the symbol and embodiment of new wealth, and of the automobile age, than the symbol of our new mass production civilization. He perfectly represented its success in technology and economics; he also perfectly represented its political failure so far; its failure to build an ordered industrial society. The central problem of our age is defined in the contrast between the functional grandeur of the River Rouge plant, with its spotless mechanical perfection, and the formlessness and tension of the social jungle that is Detroit.

Are we going to hit something?

Another curious paradox arising from the cultural lag is the ample financial support given by society to encourage more material inventions, and the meager support for the discovery of social inventions to offset them. The National Science Foundation bill is a case in point as described in Chapter I.

It is a fearful thing to be aboard an exponential curve—something like an express train out of control. Ultimately, such curves run off the map. A penny at compound interest grows in a few centuries to a ball of gold the size of the planet. Nature often permits such curves to start, as in the multiplication of locusts and fruit flies, but she never maintains them for long. They always hit something and shrink with great suddenness.

Are we going to hit something? Ogburn is too careful a scientist to say. He does point out, however, that when an invention like the atomic bomb comes along, social scientists should be asked to do their utmost to find a social invention—say a workable world state—to cope with it. He does not believe it is possible deliberately to halt the rate of material invention. Can you imagine Congress passing a law to "halt progress"? The opposition would have a field day! The answer to the tensions caused by growth curves seems to lie in encouraging steeper curves in social analysis and social invention.

The inertia of trend lines

A social change, when measured statistically, is called a time series, and is described by zigzag lines which move over time with a sweep or trend in one general direction. An appropriate equation, fitted by the method of least squares, runs through the middle of the zigzags and indicates the trend. Thus if the birth rate in recent years in western countries is plotted, the zigzags fluctuate considerably, but the *trend* is downward, with no sharp reversals. Even war does not affect it much.

We do not know why these trends rarely change their direction, although they are undoubtedly connected with culture patterns in some way. Whatever the explanation, social trend lines in hundreds of cases show remarkable inertia. There is a lesson here for social engineers. If a trend cannot be changed radically, it is

better to accept it and adjust your program to it. If you are determined to change it, prepare to see the shift take place very slowly. To plan a program *against* a trend is a perfect formula for frustration. One of the first things a reformer should do—along with examining the Cross-Cultural Index at Yale—is to get a competent social scientist to work out some trend curves so that he can see if he has a fighting chance.

Intelligent conservatives would be well advised to follow a similar course. An expert can tell them where society and the cultural lag will probably support them in holding the line against change, and where resistance is futile. One might name a number of presidential candidates who would make a better campaign if they had a pocketful of trend curves.

The exponential law casts a heavy shadow on the Great Man theory of progress. This theory holds in essence that without the giants of the past we would still be living in Mesopotamian mud huts. The exponential law, on the contrary, indicates that what determines new invention is not a giant intellect so much as the number of elements in the culture. Thus when physics reached a certain point of development in the seventeenth century, a dynamic mathematics was needed to carry on. Whereupon both Leibnitz and Newton invented the calculus independently. If neither had lived, calculus would have been invented by somebody else. History is filled with scores of simultaneous inventions of this kind. We can expect more and more of them as time binding accumulates.

If Columbus had died of plague before he discovered America, some other explorer would soon have found it. Why? Because the techniques of ship-building and navigation had reached a point where a man could sail into the unknown with a fair chance of getting back. It was the *ship* which really discovered the New World.

The invention of radio

Ogburn over the years, together with other scientists, has developed many variations on the theme of Social Change. He has shown how the interrelated parts of modern culture are changing at unequal rates with consequent strains. He has traced the succeeding waves of new behavior which follow important inventions like the automobile and the radio. He has pushed trend curves

boldly into the future to find out what the probable effects of a new invention are likely to be.

Take, for instance, his work on radio. In *Recent Social Trends* he lists 150 effects, of which 12 are in the direction of cultural diffusion, making listeners more homogeneous. Some may deplore this as an increase in American "standardization"; others realize that a more homogeneous people may have less internal strife. Here are some of the effects listed by Ogburn:

> Regional differences becoming less pronounced.
> Penetration of city musical and artistic culture into farm areas.
> The distinction between social classes lessened.
> Isolated regions brought into contact with world events.
> Illiterates brought back into community life.
> Concentration on fewer languages.
> Canada, US, and Latin America drawn more closely together.

One item on the list reads: "Interest in sports increased by radio." True enough; who that heard them can forget those first championship boxing matches over the air! But not content with this single statement, Ogburn goes on to outline fifteen derivative effects in the area of sports, a kind of secondary wave. Among them:

> Big matches emphasized to the neglect of local matches.
> Reputation of star athletes further puffed up.
> Reputation of star football coaches the same, plus an increase in their salaries.
> Recruiting of players in rural areas greatly increased.
> Colleges with high scholastic standards put at a disadvantage.
> Reduction in special sporting editions of newspapers.

Sixty-one effects following the invention of X-rays have been chronicled; 23 following rayon; 150 following the automobile—including a change in the pattern of courtship in America. The young man with the convertible has displaced the young man with the guitar.

The airplane in 1960

This is all very interesting and possibly all very scientific, you say, but what can one *do* with it? Ogburn has recently completed a monumental answer to that question, too. The United Air Lines retained him as a consulting engineer in the social sciences, to predict the probable effects of the invention of the airplane over the next ten to twenty years. His report, now available, runs to more than 700 pages.

We are reminded early in the study that there are some fifty variables to be considered in plotting the extrapolation. Within a decade, probably all first-class mail beyond a radius of 400 miles from the city of origin and all first-class foreign mail will go by air. By 1955 or so there will be not less than 75 million and not more than 100 million ton miles of air freight per year—mostly highly valued cargoes like rare fruits, films, jewelry, fancy frocks, furs. Already fabrics are being flown to China, there to be embroidered by expert needlewomen and then flown back to New York to be made into gowns. It would not astonish Ogburn to pick up a paper in 1955 and see an advertisement like this:

CRUISE AROUND THE WORLD BY AIR—
COMPLETE $600

The way technological trends are now going, New York, Chicago, and London will have to do some heroic city planning if they are to keep up with the air age. Airports, he thinks, ought to be in the center of town, not out back of the gas works where it takes forty-five minutes of rough work in a taxi to get to them. Cities which can arrange a safe central location will have a big advantage over those whose geography or vested interests in real estate do not permit it.

No one can know exactly what the place of civil aviation will be in 1960 or 1970, but an estimate based on trend curves looks like a safer probability than one based on a blind guess or on wishful thinking. Managers of airports; airplane companies; commercial air lines; federal, state, and city officials; real estate interests must now plan for the future on *some* basis. Meanwhile, the investments involved, both public and private, are enormous. Social science can be most helpful in shaping that forecast.

CHAPTER 12

In Darkest Middletown

FROM the culture concept as a central theme, we now turn to a series of anthropological reports on typical American communities. The material varies in its competence, but already there is enough to suggest many applications by city planners and social engineers.

In my library at home I have a "Middletown" shelf of a score of volumes, which I enjoy collecting as others acquire ship models. My collection started in 1929 when I reviewed Robert and Helen Lynd's *Middletown* and found it new and exciting territory. Later when writing a book on impressions of Mexico, I compared Middletown with Robert Redfield's study of Tepoztlan, an Aztec town on the Mexican plateau. This cross-cultural survey of mine was strictly an amateur performance, but it did bring out some of the striking differences between machine age and handicraft societies.

Corn belt Middletown

Clark Wissler wrote the introduction for the original *Middletown.* "We are always hearing," he said, "that the study of society must be made objective . . . the realities of social science are what people do." Here then, for the first time, is a study of practically all the things people do in a normal American town, observed as anthropologists would observe a town in darkest Africa, or in Polynesia. There had been plenty of local surveys made previously in America and Britain, but they were primarily concerned with coal miners or working girls; or with wages, hous-

ing, cost of living.[1] The Lynds tried to comprehend the whole community. "A new field of science has been opened up," said Dr. Wissler, "the social anthropology of contemporary life."

There were 38,000 people in Middletown—which everybody now knows is Muncie, Indiana—when the Lynds arrived with their small staff in 1924. The great boom of the 1920's was fairly launched, buoyed up by the soaring automotive industries. Middletown has been chosen among many candidates because it was as American as a baked apple. Manufacturing was diversified, with the glass jar business prominent. Farmers came in from the rich surrounding corn lands to Saturday market at the county seat.

There were 42 churches in town and 6,300 automobiles. Said a factory worker from the South Side: "I'd go without a meal before I'd cut down on using the car." Said a police court judge after a hard day: "The automobile has become a house of prostitution on wheels."

The Lynds stayed for nearly two years, studying the town in action under six main headings: (1) getting a living, (2) making a home, (3) training the young, (4) using leisure, (5) going to church, (6) joining up. Before they got through, 454 active clubs and associations had been identified, including, along with the Chamber of Commerce, the Lions and Elks—an Ad Club, a Kill Kare Klub, and the Sew We Do Club for upper-class matrons. As the old-fashioned home disintegrates under machine age pressures, people try to find a substitute by joining something.

The Lynds gathered material by firsthand interviews and observation, by questionnaire; by analyzing newspapers, by direct counting. They also obtained all relevant US census figures covering the town, together with state and city statistics. (Since 1924, some interesting new techniques have been added.)

Many of their observations hold good for other communities because of the standard culture now covering America. When we finish reading the section on getting a living, for instance, we know as we never knew before the economy of the 1920's. We realize in an intimate, graphic way, just how the boys and girls that we see playing in the school yards of Middletown are to be indiscriminately tumbled into the 400 occupations which the city

[1] Famous pre-Middletown studies were *Life and Labor of the People in London*, by the Booths, and the *Pittsburgh Survey* of the Russell Sage Foundation.

affords. We see the shops, offices, factories in which they are to work; the houses, bungalows, and shacks in which they are to live and raise their families; the stores in which they will buy their goods; the advertisements which will so often determine their wants; the editorials, sermons, service club speeches which will nourish their belief systems; the income groups into which they are bound to fall with the precision of a life expectancy table.

In the nineties

The Middletown findings, moreover, compare the twenties with the nineties. Wissler calls it "a new kind of history." The authors try to reconstruct the scene a generation earlier. "A small river wanders through the town, and in 1890 when timber still stood on its banks, it was a pleasant stream for picnics, fishing, and boating, but it has shrunk today to a creek discolored by industrial chemicals and malodorous with the city's sewage."

Workingmen in 1924 still attend lyceums and listen to some of the old lecture topics—"Milton as an Educator"—but businessmen have given up this type of "culture" altogether. The singing societies of the nineties have disappeared, save for one working class exception. The Apollo Club, once favored by the bloods of the town, has long since collapsed. Where are 300 schoolboys to sing Gounod in the Opera House? The Art Students' League was organized in 1892, and members went sketching along the clear waters of White River. The Art Club of 1925 listens to lectures on the Gothic Period and never handles a brush or tube of paint. Music, like poetry and the other arts, is almost nonexistent among the men of Middletown in the era of Calvin Coolidge. In the light of Linton's universals this shows how abnormal Main Street has become.

Everyone rides in a car, goes to the movies; more and more people are turning on the radio. One salty old character came back to Middletown for a brief visit in 1924. "These people," he complained, "are afraid of something." The Lynds point out that amid an ideology celebrating the ruggedest kind of rugged individualism, nobody along Main Street dared to be different. Again and again the word "bewilderment" creeps into the text. Citizens are bewildered about their jobs, about money, about the new gob feeder which can make glass bottles a hundred times faster than

a hand blower, about marriage, about religion, about the growing role of government, about their children, about their very souls.

The old traditions survive—many doubtless survive in 1948 for that matter—but even in the twenties there is little blood in them. A pecuniary economy and mass production cry for new systems of belief, but these have not yet crystallized. The lag grows longer. Back of the Buicks and the backslapping, one feels the bewilderment of a generation which has lost its way.

The big bust

The Lynds went back to Middletown to check their findings after ten years had gone by—four more years of boom, then six of bust. They wrote another book about it called *Middletown in Transition.* Today, with 60 million jobs, it is almost incredible to recall how far we dropped in the depression. Storekeepers in 1933 had lost 57 percent of their business compared with 1929 —yet there were 6 percent more stores struggling to survive! Building construction fell to 5 percent. Factory payrolls were cut in half. Motor car sales dropped 78 percent, but gasoline sales only 4 percent. The cars were old, but people kept on driving them to God knows where. Loan sharks opened their offices everywhere. When General Motors tore the machinery out of their big plant and left town, it looked as though the end had come. A full quarter of the population was on relief.

Yet for two years following the crash, Middletown sturdily refused to admit that its symbols of progress—self-help, bigger and better motor cars, bank accounts, land values—could ever go into reverse. Not until General Motors shut its plant did the leaders of the town face reality, and then only for a brief interval. Soon the first AAA checks, like gentle rain on a parched prairie, began to irrigate the Saturday market as farmers drove in to cash them. Whereupon Middletown snapped back to its belief systems. . . . When Mr. Landon was elected president—and the *Literary Digest* poll showed he was sure to be—everything would be safe and sound again.

Across the tracks on the South Side, however, the workers have pretty well abandoned 1928, and are organizing unions as never before. The great sit-down strike era is close at hand, and

we must remember that for every three townsmen on Main Street, there are seven workers on the South Side.

The Middletown credo

In a chapter entitled "The Middletown Spirit," the Lynds preserve for the curious historian the credo of 1928. No fewer than 172 beliefs are categorically listed. After the AAA checks and the federal insurance of bank deposits came in and business began to revive, the credo was reinstated in toto. As I scan the list today, I should estimate that about 100 of these beliefs have been rendered obsolete in whole or in part by the march of events. Some, of course, were obsolete even when most fiercely held. Here is a sample lot:

That economic conditions are the result of natural order and cannot be changed by man-made laws.

That we've always had depressions and always will.

That men won't work unless they have to.

That any man willing to work can get a job.

That business makes all our employment.

That the open shop is the American way, and labor unions are foolish, if not wicked.

That all strikes are due to troublemakers.

That the individual must fend for himself and in the end gets what he deserves.

That the small businessman is the backbone of America.

That women cannot be expected to understand public problems.

That the American form of government is the final and ideal form.

That government is bad and that politicians are the lowest form of life.

That high tariffs mean protection to the American wage earner against the pauper labor of Europe.

That taxes are always evil.

That Christianity is the final form of religion.

That preachers are rather impractical people who wouldn't be likely to make good in business.

That you can't change human nature.

What happened to Middletown after 1929 defied almost every canon of this credo. It was as though the sun should begin to

move from west to east. Main Street deplored federal aids for community survival and ridiculed them in a vast folk literature of stories about boondoggling. At the same time it clawed like a drowning man for more federal relief, and more and more. Its belief systems were thus at cross-purposes with its tangible behavior—creating a kind of community schizophrenia.

So Middletown has learned nothing from a world war, a crazy boom, and a depression which made beggars of a quarter of its people? No, it is not so simple as that. Middletown, like every community, must have a suit of symbolic clothes. If no new styles are on the market the old will have to do. Middletown—at least the North Side—still wears the ancient garments, but the simple faith has gone, the unquestioning acceptance of earlier days. Below the surface, Middletown is in profound turmoil and transition.

Plainville, USA

Running along the shelf, let us pick out *Plainville, USA*, by James West, for a brief glance. The author, an anthropologist, knew exactly the kind of town he wanted to study. After a long search he found a rural community of under 1,000 people in the Midwest which fitted his specifications. He made the analysis alone, between June 1939 and August 1941, as part of a larger study on acculturation, financed by Columbia and directed by Ralph Linton.

Plainville is a far less complicated community than Middletown. There are no factories, and marginal farming is the principal way to make a living. Yet the same contradiction is to be found out here on the prairies as along the Wabash. *People do not believe in what they are in fact doing.* During the great depression Plainville shifted from an individualistic to a welfare economy—it had to or starve—but almost nobody approves of it. Charity and relief have become functions of the federal government, except for a little private charity still carried on by one church. All the federal agencies are utilized to the fullest extent, yet they are denounced constantly for "ruining this country," "making people unwilling to work," "meddling with other people's business . . ."

A whole new form of rural social organization has been instituted under the government's agricultural program—the AAA, FSA, soil conservation work, farm credit, rural electrification,

government promoted cooperatives, and the rest. The older system of farm technology, social aims, and personal security is disintegrating, but reaction to the new pattern is turbulent. Nowhere have I seen this agricultural revolution which has struck America since 1933 so vividly described.

Mr. West's working methods are interesting. He made the rounds of "several notable loafing centers," collected gossip and news at every opportunity, attended church bazaars, basket dinners, funerals, baseball games, pie suppers, public auctions, Saturday "drawings." He taught in the high school when a teacher was sick, and joined a number of clubs and organizations. Afternoon and evening were often spent in interviews. These varied from a total of two hours to several hundred hours per person. He took life histories of eight adults, ranging from 30,000 to 75,000 words each. He hired high school students to record their "autobiographies," some running to 50,000 words, under the general style of "I Remember."

He ransacked the county courthouse records, and those of the AAA, FSA, and Social Security Board, and combed files of the weekly newspaper back to 1885. He read genealogies and the *History of Woodland County*. He sums up this material with the surprising statement: "For even in an isolated community like Plainville, there exists so vast a body of relevant printed and other documentary material, that no one could read it all in a lifetime."

Deep South

Next to *Plainville* on the shelf is *Deep South*. Four anthropologists, trained at Harvard, lived for a year and a half in the 1920's in a southern city of 10,000, studying its culture. More than 5,000 pages of typewritten notes form the basis for the book, together with statistical records of the town and the surrounding countryside. The investigators were two married couples, one white, one Negro, and so had unparalleled opportunity to check events from both sides of the color line.

Quite apart from the social science involved, *Deep South* gives us a memorable picture of the plantation system, both before and after the Civil War. We are shown the romantic memories, the jasmine against white columns, as preserved in the belief systems

of the upper class, and also the tangible facts of history and sociology.

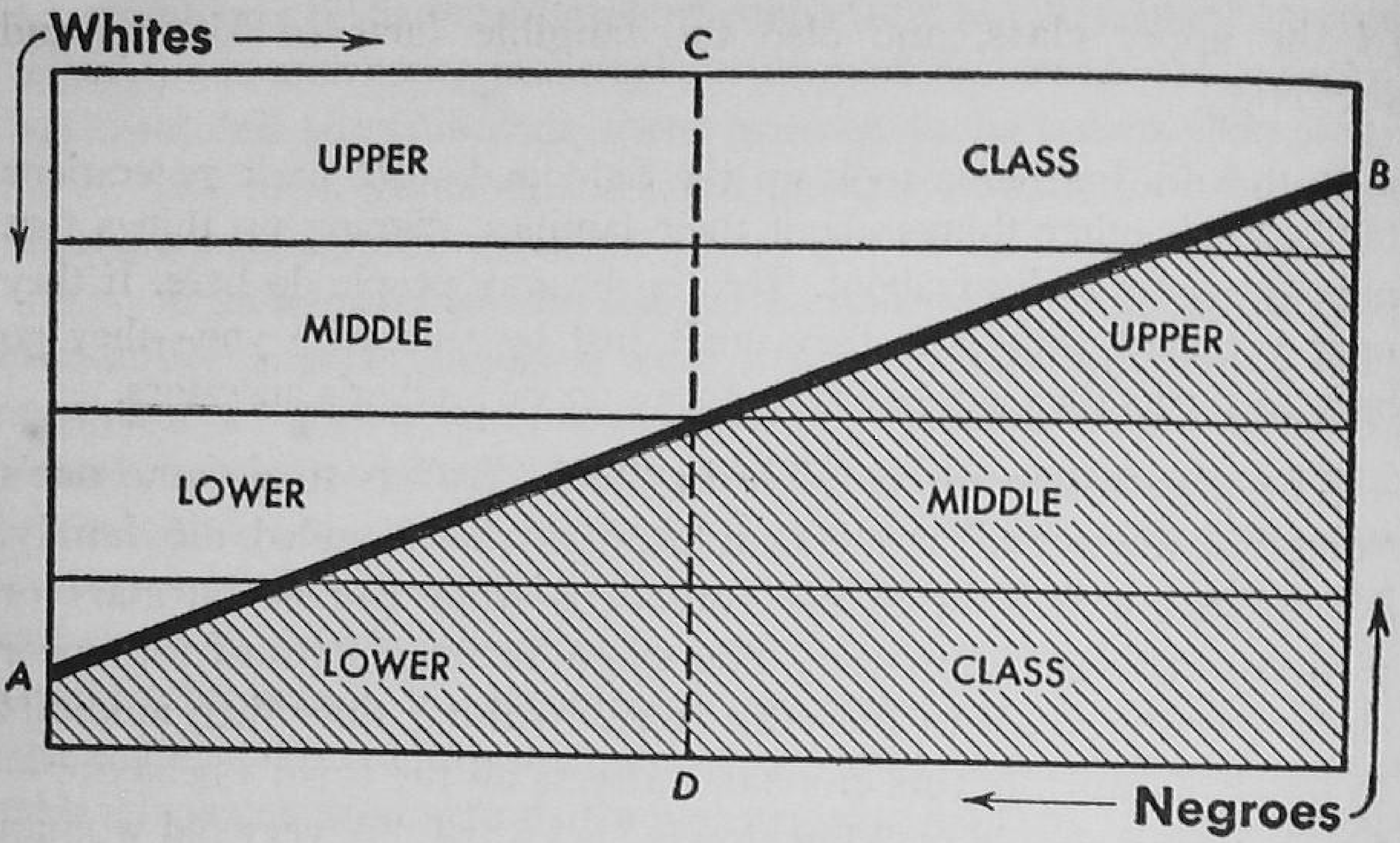
Ruth and Josephine took up the fight and went back generations telling each other things about their families, digging up things that nobody wants to hear about. That is the way people do here. If they once get mad with you, they don't just be mad with you—they go back as far as they can—telling stories on each other's ancestors.

The greatest insult possible in "Old City" is to defame one's "original ancestor," the cotton planter who founded the family. No attention is paid to *his* forebears—they can be burglars or pirates—it does not matter. The whole belief system of the upper class is centered about the year 1840. Nothing since then amounts to much. Naturally this emphasis affects all the town's behavior—ten thousand people walking slowly backward. "A very old woman may be said to be a symbol of the upper class group. . . . The ritual and deference surrounding her attendance at a group gathering—generally limited by her great age to afternoon tea—is suggestive of royalty." She is the cherished link with the past, the closest living symbol of "the old days."

In the old days the planter aristocracy was recognized as superior to all white freemen, who in turn were infinitely superior to all black slaves. This pattern was destroyed in the Civil War, but after some floundering in the dark days of reconstruction, "a new social system in Old City and its countryside began to evolve. It, too, organized the relation of Negroes and whites among themselves and with each other." It divided the occupations carefully, too, Negroes getting the more unpleasant tasks.

Class and caste

But a curious and interesting change is now taking place. Nobody should write seriously about race relations in America without mastering this change, for it extends throughout the deep South. The investigators call it the emergence of a *class and caste system.* Educated Negroes, such as doctors and professional people, "recognize themselves and *are recognized* as being different from the laborers and domestics who now work for both whites and Negroes." The following diagram helps to visualize the system:



The line AB is the caste line, dividing Negroes from the white. No Negro may ever marry a white person. Other rules may be broken, this one never. One cannot marry across a caste system by definition; children cannot be legitimatized across it.

But on the Negro side of the line, as well as on the white, classes form—upper, middle, and lower. The white middle class has standards similar to the Negro upper class; the white lower to the Negro middle class. People can marry across *class* lines, and can move up and down across the lines. It is not easy or frequent, but it does happen. This mobility is what distinguishes a class from a caste system.

Before the Civil War the line AB was not skewed but *horizontal*; there were no Negro professional people, no Negro upper class. Slaves were in the subcellar, considered a different species altogether. Will the line AB continue to revolve until it approximates CD? Then the races would be truly equal, though still separate. If they should ever cross this barrier, there would be no more caste system in Old City.

Other Middletowns

There are many more books on the shelf. Here is *Preface to Peasantry,* a study of two Black Belt counties by Professor Arthur F. Raper, particularly interesting for its description of how the New Deal came to darkest Georgia. To jump 5,000 miles north,

here is *Arctic Village* by the late Robert Marshall. By profession a forester, Mr. Marshall determined IQ's and other data about every single person in a small Alaskan town, including the Eskimos. He lived there all winter, writing notes in his shack at night.

Here is *Small Town Stuff* by Albert Blumenthal, a keen analysis of a mining town in Montana; *Small Town* by Granville Hicks, the most readable of the lot but the most personal. Here is *Wilton: A Study of Suburbanization* (from where I am writing I can almost throw a stone into Wilton); *Holyoke, Massachusetts,* and *American City,* and a dozen more.

Documentary

Let us take down *Home Town: The Face of America* by Sherwood Anderson, and look over the photographs. This is a very special kind of scientific record, one which may have a considerable future. Instead of a man with a notebook, we have a man with a camera. Anderson's prose is, as usual, admirable, but the pictures tell us even more.

To get these pictures, Roy Stryker of the Farm Security Administration dispatched expert photographers all over America with instructions to record what people were doing—no posing, no retouching, no tricks; the straight documentary story. More than 35,000 negatives were collected. *Home Town,* accordingly, is not an account of a specific community, but a generalized picture of small-town life in the 1930's—Main Street, the Methodist Church, Town Meeting, Back of the Tracks, the Civil War Monument, the Church Supper, the Drug Store, One Room School, Front Porch, Saloon, Movie House, Shacktown, Poker Game, Filling Station, Service Club Lunch, Revival Meeting, Town Constable . . .

We have in this Stryker collection a kind of visual sampling report—telling more, in one way, than any table of figures. . . . Cornfields in Iowa to make a farmer's mouth water, dust and drought to dry anybody's throat, pictures of sunny rural peace, terrible pictures of rural poverty. The weathered faces of men, the faces of women sagging with household drudgery, the pinched faces of children, the cow barn, the farmer's tools, the sharecroppers' rags—"they are all here, photographed in their context,

in relation to their environment. In rows of filing cabinets they wait for today's town planner and tomorrow's historian."

Here is *Chan Kom*, a Maya village in Yucatán, superbly directed by Robert Redfield—but more a study in primitive anthropology than a regular Middletown.

Yankee City

So we come to the four published volumes (with two more to come) of the Yankee City series—the Middletown to end all Middletowns. It is the most ambitious, the costliest, most searching and technical of them all. Only time will tell whether it is also the soundest contribution. Thirty scientists worked on it over a five-year period from 1930 to 1934—though they were not all working at once.

W. Lloyd Warner, back from a three-year study of Stone Age peoples in Australia, was appointed director. With him were associated scientists from Harvard, Chicago, Yale, and elsewhere, and Paul S. Lunt was his first lieutenant. The Crane Memorial Fund underwrote the study.

Two regions in America had been selected as having the most stable local cultures—New England and the deep South. A city was chosen in each region for intensive analysis. Of the southern project we have already caught a glimpse in *Deep South*. The northern one was far more ambitious. The city chosen was once a great clipper-ship port at the mouth of a large river. Now its seafaring activities have declined to a little clamming along the mud flats, but shoe factories, silverware, and other industries keep the people employed in normal times. The old China trade families, each in its stately colonial mansion crowned by a captain's walk on Hill Street, rival the plantation families of Old City in pride of ancestors and heirlooms. The whole town, on the rising ground above the river, displays an architecture more gracious than America has built for a hundred years. (Architecture is one of the most significant elements in any culture.)

When the social scientists moved in, there were 17,000 men, women, and children in Yankee City. When they moved out, they carried Hollerith machine punch cards for every one of them, with notations showing age, sex, status, occupation, clubs, religion, political affiliation, housing, health, income, expenditures,

property owned, education, magazines read—and Heaven knows what. By running the cards through a machine, they could classify everyone in town in every conceivable manner. No community of this size ever had such a going over.

The research staff was particularly interested in the class structure of Yankee City—who outranked whom?—in the family structure, the factory system, ethnic groups like the Irish, Jews, Poles, French Canadians, Negroes; in housing, property rights, sources of income, clubs and cliques, churches, schools, and the political framework of the town. . . . It is all there, in staggering detail. They devoted a whole volume to an elaborate theory of "positional analysis," whereby the status of anyone in town can be mathematically determined in relation to anyone else.

True story

In the middle of Volume I, the summary of the Yankee City survey, we find a novel experiment in social science. Here are a dozen very human short stories, more or less in the *New Yorker* manner. Each is a true story, right from the punch cards and the notebooks, with fictitious names, of course. One of them begins like this:

> Mr. Charles Watson, the superintendent of the cemetery, squatted on his haunches while he supervised the pick-and-shovel activities of two workmen. It was hot. . . . A shoveler stopped his work and lit a cigaret. "Why the hell can't Phil Starr leave his old man and old lady rest in peace? Why they've been down in this grave thirty years. And now, by God, he's digging them up and running all over town with them. I say once they're buried, let them stay buried."

And another:

> Going home after he had said goodnight, Sam Jones crawled in bed beside his wife, and the springs sank in the middle. Three small children were asleep on a mattress in the corner of the room. Two adolescent daughters slept on cots next to the wood stove in the kitchen. . . . It had suddenly turned bitter cold. The kitchen table was still littered with the remains of the evening meal.

These stories have an effect like the photographs in *Small Town*: they tell about people in a vivid human way, and so offset the cold tables and the graphs.

The six classes

The research staff had not been long in town before a cherished hypothesis was upset. They began their labors believing that the fundamental structure of American society was *economic*—rich on top, poor on the bottom—and that the richer you were the more prestige you had. But evidence began to accumulate which made it difficult to accept this simple thesis. Six classes were finally identified by the people of the town themselves. "She's one of those Hill Street snobs. . . ." "He runs around with the Riverbrook gang. . . ." There were borderline cases, of course, but after thousands of interviews, nearly everyone in town was placed in one of six classes as follows:

1. Upper upper
2. Lower upper
3. Upper middle
4. Lower middle
5. Upper lower
6. Lower lower

It was found that the rich were not necessarily on top, nor the poor necessarily on the bottom. The richest class was the lower upper, while some of the old families in the upper upper class were poor as church mice. Also it was interesting to note that many of the clammers in the lower lower class, who lived in shacks along the river, were descended from the same Anglo-Saxon forebears as the great folk on Hill Street. When fate beckoned they had preferred clammin' to smuggling.

This, observe, was a class system, not a caste system. Observe, too, that it bore little relation to the Marxist "class struggle." People moved up and down from class to class, but mostly up; and occasionally they married across class lines. The upper uppers were without exception old Yankee stock, but the Irish were breaking into the lower upper, Jews and Italians into the upper middle. It is an exhilarating sight to see steerage immigrants from the old country land first in the lower lower, and then ascend as in a slow elevator, class by class, while a misfit from Hill Street flashes by them on his way to the bottom.

Middletown as social science

Granted that my Middletown shelf holds some of the wisest and best documented information about contemporary American

communities, is it social science$_1$ or social science$_2$? Is it a development of fresh theory or application of theory already developed? Does it add anything of lasting value to the storehouse? Better judges than your author will have to give the final answer. But as a roving critic and collector who makes a hobby of Middletowns, I am prepared to say this:

1. The really intensive studies, beginning with those of the Lynds, are based solidly on such theory and universals of human behavior as the cultural anthropologists have developed to date. They are keyed in to the culture concept and so are applications of social science$_1$.

2. Despite this, I have a feeling as I pursue my hobby that more theory is needed for contemporary studies in machine age cultures, and also better techniques. I feel that we ought to get more per manhour expended.

3. The information already available, however, in these books and monographs cannot fail, as Wissler said, to be helpful to all who direct the affairs of American towns—mayors, selectmen, city managers, chiefs of police, welfare commissioners, housing authorities, city planners, social workers, police court judges, traffic officials, school boards.

Do the officials know about this development of social science? They do not. Most city fathers have never heard of the Middletowns; I have asked them repeatedly. So I should like to propose a further research project. Let a competent group of social scientists be financed to assemble all the Middletowns so far recorded, to compare them carefully and find the common denominators, together with outstanding conclusions. Let a clear, brief book be written, called *Manual for City Managers*, summarizing the study, and sold for a reasonable figure, and widely advertised.

The Middletowns have given us the essential structure of American communities, large and small, North and South, East and West—though no big city has yet been studied. Such a mayor as Wilson Wyatt of Louisville would be enormously instructed by a handbook covering the Middletown universals. There would be answers, complete or partial, to such questions as:

What are my people like?
What will my community do under stress?

What can I always count on?

How can I make changes with the least popular resentment?

What are the strongest systems of belief, to be carefully respected?

CHAPTER 13

New Light on Labor Management

FOR many thousands of years men have worked at the bidding of other men, sometimes as kinsmen, sometimes as slaves, sometimes as freemen. An unequal relation between manager and worker is nothing new in human affairs—think of the building of the Pyramids. But it is hard to realize that the factory system, especially in its mass production phase, is something never known in any earlier society. We can say this without fear of contradiction because there never was a practical prime mover to power factory machines until Watt invented his steam engine in 1776.

The master-servant relation which crystallized in the early factories was derived in part from the old family system, in part from the apprentice-craftsman system, in part from the lord-of-the-manor system. It worked, in the sense of getting out the goods—at least in fits and starts—but it seldom worked in the sense of willing human cooperation. Karl Polanyi, in *The Great Transformation,* demonstrates that the chief trouble with the early factory system was not that it exploited people economically, but that it destroyed immemorial culture patterns and put nothing in their place.

The factory was a crippled institution from the beginning. From its maladjustment rose the "labor movement," trade unionism, industrial unionism, socialism, communism, the IWW, and various short-tempered ideologies. From it arose concrete physical effects as well—strikes, lockouts, sabotage, slowdowns, sitdowns, riots, goon squads, barricades, and untold destruction and violence.

Explanations of the failure of labor and management to

cooperate in using the machine have been loud and dogmatic. Spokesmen for the workers have said that the bosses exploited them shamelessly, piling up fabulous profits while men starved. The bosses, angry at this charge, have said that workers were inefficient, lazy ignorant, unreliable, and easily misled by agitators —mostly foreign. For a century and more the chorus has thundered back and forth, with little reduction in the volume and violence of strikes, bad blood, and bad language.

The principal attempts to understand or at least explain the "labor problem" occurred in two directions: in the elaboration of the aforesaid ideologies, largely variations on the "class struggle"—which infuriated the managers; and in time studies of physical movements by stop-watch engineers—which infuriated the workers. The scientific method as we have defined it was not applied anywhere to the real problem of labor-management relations. Frederick W. Taylor's *Scientific Management* applied the scientific method to the working technique but not to the worker. Here and there, good relations were maintained by intuition on the part of a wise employer. No one knew how he did it, least of all himself.

If you started a nice little business—say the production of aluminum wheelbarrows—you could get all kinds of scientific advice about your machines and materials, but very little on how to handle your men. You could buy payroll books, of course, and fine chromium-plated time clocks, but no information about the characteristics, temperatures, and boiling points of the men and women who came to work for you. So some days the wheelbarrows came off the line per schedule, and some days they did not. You began to wonder what you could have done to be hated so. Presently you joined the National Association of Manufacturers and began to hate back in orchestrated union with other employers.

This dreary round continued with hardly a break until a group of social scientists, under the guidance of Elton Mayo, performed a series of experiments in a factory and discovered some of the basic theory involved. The publication in 1940 of *Management and the Worker* by Roethlisberger and Dickson was a landmark in the history of both labor relations and social science. It made obsolete a century of assumptions, assertions, and dogma about

"labor." In effect it reported "no such animal." Let us look at two of the most famous experiments in the book.

The Hawthorne experiments

Six girls are sitting in a small room in a large factory in the town of Hawthorne, near Chicago. On the bench before them are small metals parts in trays to be assembled into a telephone "relay"—which looks something like a pocket whistle. Their nimble fingers fly. When a relay is completed, every minute or so, it is dropped into a chute where it is automatically counted. The production rate of each girl, and of the group, can thus be figured per hour, per day, per year.

In the back of the room sits a man with a notebook, watching everything that happens, day in, day out, for five years, beginning in 1927. (He has substitutes from time to time.) The girls do not resent him, they come to like him and often tell their troubles to him. They learn to trust him as a kind of father confessor, and he respects their confidence. He represents the company, the Western Electric, and the Harvard School of Business Administration, which are jointly making the experiment under Dr. Mayo's general direction.

In experiments for the Fatigue Institute in England during World War I, Mayo had worked with factory women before. He proved that sometimes they produced more munitions in a ten-hour day than in a twelve-hour day. This was contrary to common sense, but not to human nature—which may tire and run down when worked too long. The girls at Hawthorne were a test group, being compared with a control group assembling relays in a larger room. The object of the experiment was to determine the effect on output of various changes in hours, in wages, rest periods, piecework, and so on. The assumptions were that higher wages would increase output while shorter hours might decrease it—the usual common sense assumptions.

Before the experiment was a year old, all preconceptions had been seriously upset. What was the matter with these girls? Why didn't they behave the way they were expected to behave? Being scientists, the investigators continued to keep a faithful record of what happened even if they were in the dark as to what caused it. The mystery story developed like this:

The first seven weeks were devoted to establishing a base period. The girls averaged 2,400 relays a week each, and worked a regular 48-hour week, including Saturdays.

They were then put on a piecework basis for eight weeks. Output went up.

They were given two rest pauses, morning and afternoon, for five weeks. Output went up again.

The rest pauses were lengthened. Output went up sharply.

Six rest pauses were tried and output fell off slightly. The girls complained that their rhythm was broken.

Then back to two rest pauses. Output went up again.

Hours reduced for a seven-week period. Output went up.

So it continued, trial after trial, each one lasting for some weeks. Whatever new factor was introduced, the number of relays coming through the counters increased, with the one exception noted. The research staff began to lose sleep as their assumptions disintegrated. Some force they could not measure was pushing output up no matter how they shifted hours, wages, rest pauses.

They prepared then for a supreme test. Take away *everything* given to the girls over all the periods, and go back to where the experiment started—forty-eight hours, no rest pauses, no hot lunch on the company, no piecework, no Saturday holiday, nothing. The supreme test lasted twelve weeks. Output jumped to an all-time high—3,000 relays a week!

The social scientists were as disorganized as their assumptions. They had tried to return the girls to the original conditions of the experiment but the original conditions had disappeared. The experiment had transformed the group; the girls no longer possessed the characteristics they had started with. What was this mysterious X which had thrust itself into the experiment? The staff began looking for it all over the factory but it was not there.

They finally found it in the girls themselves. The workers' attitudes had changed. The mysterious X was the way the girls now felt about their work. By putting them in a little friendly world of their own, by consulting them often, the scientists had caused a psychological change in these young women and given them a new sense of their status and value. The girls were no

longer separate cogs in an impersonal, pecuniary machine; they were helping in a small way to direct the machine. So their output went up no matter how conditions were changed under them.[1] The investigators concluded that this happened because the girls were recognized, because they felt *important*. They had found work whose purpose they could clearly see. So they performed their tasks faster and better than ever before in their lives.

Since the invention of the steam engine most factory managers had regarded workers as "hands"—a part, and on the whole an unreliable part, of the cost of production. "Labor" was a commodity, to be bought and sold like pig iron. Sometimes, by way of contrast, a paternalistic manager treated his workers like little children, to be given candy and petted. The Hawthorne experiment broke down these illusions and proved that the way to make workers work hard and willingly lay in two basic and allied principles:

First, make the worker realize that his work is important, and that he is important.

Second, accept the fact that a factory is part of society, and under its roof society must function in its accustomed ways. Bands and teams and groups will form. They must be allowed for, utilized, and respected.

Fourteen men

The research staff then proceeded to set up their instruments in another room in the Hawthorne plant. Here were fourteen men engaged in "bank wiring," which means attaching wires to switches for certain kinds of telephone equipment. Nine men are wirers, three are solderers, two are inspectors. In another frame of reference, four are Czechs, three Germans, three Yankees, two are Poles, one is Armenian, and one Irish—an average Chicago ethnic cocktail.

These men have somehow become a team, a little society, inside the Hawthorne plant of 20,000 workers. Unlike the group of relay girls, however, this society does not increase output which is one of the reasons it is being studied. Not only has a team been formed spontaneously, but natural leaders have risen to the

[1] Of course, if physical conditions had been changed beyond tolerable limits, output would have been affected.

top. The managers of the plant are sublimely unaware of the strength and toughness of this outfit. The fourteen-man team is not opposed to management but comparatively indifferent to it, having more important matters to attend to. It is strictly a cultural phenomenon, not an economic one. The men are not concerned with the amount of money they get nearly as much as they are concerned with how their wages compare with Tom's and Jerry's. The *relative* factor is what counts with them.

The company has recently adopted an "incentive pay plan," whereby the more work an employee does, the more he earns. It is a fair plan, and contains no speed-up provision, and management assumes it will increase production. It does nothing of the kind. The team members hold to a flat 6,000 units a day, no more, no less—though they could readily turn out 7,000 units without fatigue. If some member gets ambitious, the gang slaps him down. There is no apparent relation between an individual's ability and his output. The team does not act in accordance with its pecuniary interests at all. Why?

More brain racking for the research staff. Why don't workers earn more money when they have a fair honest chance to do so? The answer seemed to be that the men in the bank wiring room were more interested in maintaining their group than in hard cash. This was a result which neither the incentive plan nor the management was prepared to cope with. Yet any management which leaves out the feelings, sentiments, belief systems of the workers is operating in the dark.

The whole great plant at Hawthorne was found to be full of similar informal groups and teams, powered by leaders whom nobody in authority had ever selected. They exerted a rigid control over "rate busters"—who turned out too much work; over "chiselers"—who turned out too little; over "squealers"—who told on group members. The life of a squealer could be made very unhappy indeed.

It was further found that the efficiency engineers had tried in the past to break up informal groups, hoping to free individuals for greater production. This policy looked well on paper but time and again production went down when it was put into effect. The stop-watch men had unwittingly deprived the worker of the thing

which chiefly gave meaning to his work and without which his full cooperation was impossible.

Aircraft plant team

During the war, other social scientists from the Harvard Business School studied labor-management relations in California aircraft factories for the government. Why were labor turnover and absenteeism so high? Here is a case which helps to explain it.

John Briggs is a team leader in Department Z. Nobody appointed him, he just is, and every worker in that end of the shop knows it. One day John goes to the supervisor to present a grievance for one of his team members—a little matter, easily straightened out. The supervisor, who is having an off day and dislikes John anyway, offers him his time before the grievance is even heard. Maybe it was about the lights, maybe the washroom. Whereupon a team leader is lost who the management did not even know existed. John had been building up production the way a good football coach builds a random collection of rookies into a striking force.

The research men discovered he was boosting morale at his end of the plant, and was in a position to relieve the foreman of many problems of minor discipline—a real tower of strength. And now he is walking out the gate, burning with resentment at the supervisor and the company. The team he had led has lost its structure. In the front office, the chart-makers will presently begin to wonder why output in Department Z has gone all to pieces.

The social scientists found three kinds of groups in aircraft factories: (1) a "natural" team, with rarely more than seven members; (2) a "family" group, with up to thirty members, where leaders guided the newcomers and the less experienced; (3) an "organized" group deliberately set up by management to take advantage of this human urge. It is useless for management to ban informal groups. They will form anyway; they seem to be as natural as falling in love. So intelligent managers now are utilizing the drive behind them and even organizing them deliberately.

It was found in this California experiment that most absenteeism and labor turnover came from the ranks of workers who did not make a team, who perhaps had no chance to do so. Thus they

had no social life in the factory, nothing to hold their interest and loyalty. Again and again the path comes back to that first principle of the anthropologists: man is a social animal.

You cannot fail to see what has happened in these experiments. Social scientists are at last getting at the basic theory underlying human relations in factory and office. Prior to Hawthorne, we had nothing but guesses, some expert know-how with no underlying theory, a little common sense, and a great deal of plain loud dogma from management and men. Now we are beginning to know what makes workers work and testing the knowledge in controlled experiments. As Roethlisberger says:

> I should like to suggest that the manager is neither managing men nor managing work, but that he is managing a coordinated set of activities; he is administering a *social system*. That is the human relations approach as contrasted with any approach which implies that people at work can be considered separately from their work.

The big story is that when a factory is studied as a social system—a functioning community like Middletown or Plainville—the behavior of workers makes sense. When it is regarded as an exhibit in the class struggle, or in paternalism, or as a kind of zoo for Economic Men—what workers do makes no sense at all most of the time. About all the investigator can do is to cuss human nature. It goes without saying that union leaders need this new knowledge as much as company managers.

Mayo deserves credit for opening up this fruitful research more than any other one man. But some anticipated him, like Carleton Parker and Clarence J. Hicks. Many cooperated with him at Hawthorne and other experimental stations, like Roethlisberger. Many more, indeed a growing army, are refining theory and techniques at Yale, MIT, and other universities, while young men trained at these centers are applying the new knowledge in industry and government all over the country.

A million foremen

Perhaps the most ambitious of recent applications was the Training Within Industry programs initiated by the War Manpower Commission during the war. More than a million foremen

in war industry were taught new methods for handling the group under them, based on the recognition that they were human beings in a social structure. In one simple technique the foreman may straighten out a situation in the factory by letting Bill tell him about the trouble at home. This is a long way from the old-time foreman who was asked:

"How do you handle a new employee?"

"I jest stand there . . . and stare him down to kinda show him how dumb he is."

"And then?"

"Then I spit. . . ."

The Job Relations Course in the TWI programs gave every foreman a little blue card with these principles to be constantly referred to:

> Let each worker know how he is getting along.
>
> Give credit when due; tell him while it's "hot."
>
> Tell people in advance about changes that will affect them. Tell them why.
>
> Look for ability not now being used.
>
> People must be treated as individuals, not numbers on the payroll.
>
> In any given problem, *first* GET THE FACTS, then weigh and decide and only then TAKE ACTION. Afterwards be sure and check results.

This problem-solving technique for foremen is not merely a common sense approach, it is based squarely on scientific method.

Another interesting application is a project of the National Planning Association, under the direction of Clinton Golden, trade union leader and teacher at the Harvard Business School. A score of plants all over the country with especially good labor relations are being studied on the spot by social scientists. Both unions and managements are actively cooperating. If characteristics are found common to *all* successful programs, scientific conclusions can be drawn and made available to managers, government officials, and unions everywhere.

Benjamin M. Selekman, long a co-worker with Mayo at Harvard, in his book, *Labor Relations and Human Relations*, makes this cogent summary.

> In exploring the hostilities implicit in modern industry, we must be careful not to idealize the human satisfactions in earlier societies.

Man proverbially has had to earn his bread by the sweat of his brow, and nothing in the historic record justifies the belief that he ever found the toil and sweat in themselves deeply desirable. The reduction in back-breaking human costs of labor by the development of modern industrialism has long been accounted one of its outstanding benefits. Nonetheless, from the beginning of human experience, work has been part of the whole effort of man to master and control his environment. . . . Its emotional satisfactions stem normally, therefore, from the sense of effectiveness the individual derives from the daily round of labor. The average worker no longer draws this basic satisfaction from his job.

How can he recapture it? This is the fundamental question in the labor problem of today.

CHAPTER 14

Why Men Strike

LET us go back for a moment to the aluminum wheelbarrows you were going to manufacture. You joined an employers' association, you recall, because the workers hated you. But Mayo and his school make it plain, I think, that the workers do not really hate you. What they hate is the work situation in which they find themselves in nearly anybody's factory. Like the Japanese-Americans around the bonfires at Poston, they are filled with feelings of frustration and insecurity. Life in a factory has little meaning; deep-seated human needs developed over the millennia, biological as well as cultural, go unsatisfied.

Think, for instance, of the frustrations and irritations imposed by a time clock. The sharp regular daily division between work and play is a condition that must have been virtually unknown throughout the long ages of pre-factory history, says Barbara Wootton. This and other frustrations your workers feel have crystallized into hatreds, and unless something is done about it will ultimately find an outlet in violence. The men come to hate you, not for yourself, but as a symbol of their own unrest.

It will take more than a Taft-Hartley law to surmount this condition. If we cleaned out all the 'isms, 'ologies, and agitators, the bitterness and unrest would still be there. If we gave the workers full employment, guaranteed annual wages, music in every department, some of it would still be there. A fundamental human need is being violated and nothing can assuage it except a change in some of the conditions of work under mass production.

How did your workers get into their psychological difficulties?

It has been a long process, probably covering centuries. The best description I have ever seen is an account in Volume 4 of the Yankee City series. It leads off with a vivid story of a strike in the shoe factories of the town, and proceeds to analyze the 300 years of history which lay back of the outbreak. If anyone wants to understand what mass production has really done to those who tend the machines, here is a concrete case in sharp, clear outline.

Strike!

On a cold March day at the bottom of the depression in the 1930's, 1,500 workers walked out of the dozen shoe factories in the city almost without warning. They struck with such impact that every factory was closed tight; not a man remained at his bench. The principal industry of the town went cold at a time when work was hard enough to get.

The outbreak lasted just a month. In two weeks the strikers were completely organized and began picketing with great efficiency. Two weeks later the managers recognized the union. Arbitration by the state board was then accepted, giving the workers everything they had struck for.

The managers were dumfounded by this rush of events. Again and again they had said that their employees were too sensible and dependable ever to go out on strike. Yankee City workers had never been thoroughly organized, and union men from the shoe factories of Haverhill and Lynn declared that they couldn't be organized—they were too obstinate and independent. Some of the workers themselves just before the walkout had told the research staff there would be no strike. Then the impossible happened!

> . . . foreigners and Yankees of ten generations, men and women, the very old and very young, Jews and Gentiles, Catholics and Protestants—the whole heterogeneous mass of workers left their benches, and in a few hours wiped out most of the basic production from which Yankee City earned its living. Not only did they strike and soundly defeat management, but they organized themselves and joined an industrial union. . . .

Explanations

How could this have come about? To find the real causes required months of study. Explanations, however, were offered

within ten minutes of the walkout. Everyone naturally asked the reason, and everyone had his own private answer. Apparently John Dewey's "quest for certainty" was in full cry. It was the *depression*, said a manager; *low wages*, said a worker; a *plot of the rich*, said a Greek shoe cutter; a *red plot*, said a superintendent; *union agitators*, said a Hill Street upper upper gentleman . . . "Each man, owner and worker and townsman, spoke his own brand of economic determinism."

Plenty of noneconomic determinism was offered, too, and many scapegoats. "It's the goddam foreigners," said some of the Irish-Americans, thinking of recently arrived Greeks, Poles, and Armenians. "It's the goddam Irish," said some of those whose forebears had landed earlier. "It's those New York Jews"—meaning the financial syndicate which now owned the shoe factories. "If only fine men like Caleb Choate were still running the factories there wouldn't be any trouble." (Choate was a paternalistic local capitalist of the 1890's.)

Warner's research men were all over town, for the strike had come while the Yankee City survey was in full swing. They seized the opportunity to learn more, and sat in with managers, talked to workers, union organizers, tradesmen, city officials, government arbitrators. "All of them told us why the strike had happened. Each told us but part of the truth; no one knew all of it." In every account, important characteristics were left out.

> If social science is to be of any worth to us it must be capable first of all of adding significance and meaning to human behavior which will give us deeper insight into human life, and explain more fully than common-sense knowledge why human beings act the way they do. Science necessarily solves problems. To solve them it must know what questions are involved.

Among the questions formulated by Warner's group were these: In a community where there have been very few strikes in the past, and no successful ones, why did the workers suddenly walk out *en masse*, hold their ranks firmly, and win all their demands? And again: How could such a strong labor organization arise in a town where unions hitherto had hardly been able to get a toehold?

What in short were the *real* reasons for the strike, as contrasted with the alleged reasons so freely offered? It did not take long for

the social scientists to agree that one real reason *was* the depression. Yankee City, like Middletown, had been hit hard. A relief clerk reported: "Last Tuesday I saw 360 people here, and yesterday 240. . . . We have two doctors, a minister, lawyers, businessmen on relief—people you'd never believe could be on our books." Citizens were breaking up furniture to burn in their stoves; many were in fear of actual starvation.

The violent downward course of the depression, which soon absorbed every penny of local welfare funds, and which continued in spite of the assurances of town leaders and all their credos, wrenched people out of normal behavior, and made them ready for unprecedented action. It was clear, too, that the depression had intensified the animosity which shoe workers felt toward the managers.

Depression, low wages, overrapid style changes in shoemaking, waiting around the shop without pay, all had contributed economic reasons for the explosion. But they do not explain nearly enough. There had been a strike in the boom times of the 1920's when wages were high and economic conditions excellent. True, it was an abortive outbreak, but it would not have occurred at all if economic motives *alone* were involved. Something else was eating the vitals of the workers; what was it?

Tracing back

Now the research staff began delving into the past. They constructed an economic and social history of Yankee City since its founding in 1635. (I had an ancestor, Aquilla Chase, who landed there from England soon after.) They constructed a technological ladder for shoe manufacturing. With the help of John R. Commons they reconstructed the labor history of shoemaking; and with the help of Emile Durkheim, the progressive development of machines and division of labor which led to the mass production of shoes.

The first wharf in Yankee City was built in 1655. Presently many of the townsmen left their farms and took to the sea. Before 1760 the town had become an important port in a rapidly expanding commerce. While France and Britain fought for world empire after 1785, American ships took over much of the European carrying trade, cruising the Atlantic from North Cape to the

Gold Coast. The greatest days of all came in the clipper ship period from 1820 to 1865. In 1854, seventeen large vessels were launched from local shipyards. But soon the steamship ended the era of the sailing vessels. By the turn of the century only a handful of the once great fishing fleet remained. Today the only representatives of the sea are the clammers on the mud flats.

Boots and shoes

What were the townspeople to do when their chief industry and glory failed? With characteristic Yankee energy (a cultural product, remember) they started other industries: first the comb business, then the textile business, then the boot and shoe business. In 1865, 100 people worked in four shoe shops. By 1890, 2,000 shoemakers were employed, most of them in one large factory. At the time of the strike there were about 1,500 workers as we have noted.

With this background, let us take a careful look at the table on the following page, one of the most significant tables ever compiled by social scientists. It shows in thumbnail form what has happened to shoes and shoemakers since the early 1600's. More than that, it typifies what has happened time and again wherever the machine has come in to substitute its steel fingers for flesh and blood. I have slightly shortened and edited the table as it appears in the Yankee City volume.

The historic reason for the strike comes out in the table with startling clarity. Shoes used to be made by people who wore them themselves, or took pride in their skill, or both. They are now made by people who do not wear them, have no idea what happens to their output, and who have been deprived of their skill and the status which went with it. From a dynamic, interesting human occupation, mass production has changed shoemaking into a passive, impersonal, monotonous occupation. So shoemakers in 1933 were under tension not only economically but *emotionally*. Their work was not integrated with their life.

What a curve of social change the table reveals! When my ancestor and his companions first came as immigrant farmers to Yankee City, families made their own shoes as one of the winter tasks. Then came the itinerant cobbler with his tools to take the hides the family had cured and live with its members for days or weeks while he measured their feet from baby to grandfather,

EVOLUTION OF SHOEMAKING IN YANKEE CITY

	Technology	*Division of Labor*	*Ownership and control*	*Worker-Management Relations*	*Producer-Consumer Relations*
1600's	A few basic hand tools.	Shoes made by the family for members of the family. A few itinerant cobblers.	Materials and tools owned by the family, of by journeyman cobbler.	All in the family.	Family consumes the shoes it produces.
1700's	More and better hand tools.	A group of families make shoes with some division of labor. A few highly skilled jobs.	Local control of materials and tools. Some workmen do not own all their tools.	All among kin or close neighbors.	Shoemaking families sell or barter with neighbors.
Up to Civil War 1860	First simple machine tools, Howe machines, etc.	The "letting out" system, where one man assigns jobs to craftsmen.	Small shops locally controlled. Workers usually still own tools but leather supplied by local entrepreneur.	Apprentice and craftsman system. Worker slightly subordinate to owner-manager.	Local market supplied by small shop. Owner-manager is also salesman.
1860 to 1920	More elaborate machine tools, Mackay machines. Beginning of mass production.	Shoemaking goes into factory with some machines but still many skilled jobs.	Factories are owned by local capitalists. The latter own all the tools.	Apprentice and craftsman system. Owner further removed from worker and delegates many functions of management.	National market. Many sales outlets. Brisk competition.
1920 to present	Full mass production, assembly lines, perfected machine tools.	Machine takes over the craftsman's skill. Factory work becomes dull, unskilled routine.	Ownership of factories, tools, machines, transferred to New York.	Unorganized workers lose their skills, followed by strike and industrial union. Industry-wide collective bargaining. Managers sent in by New York owners.	National markets, but few outlets. All shoes sold to one retail chain.

and made their shoes. His pay was mostly board and lodging.

About 1760, small shops were set up for the first time to make shoes to order for the local folk. They were called "ten-foot shops." A customer who went to be measured "bespoke" his order, and the shoemaker produced the complete article. Later the first entrepreneur, or capitalist, appeared. He hired workers to make boots and then he sold them in the immediate neighborhood. Specialization began; some workers made soles and some made uppers. But there were as yet no machines.

Mass production era

Now comes a great change! In 1852 a machine for stitching uppers was invented and within a decade many other tasks had been mechanized. The decline in labor costs per pair of shoes was fabulous, down to 10 percent of the old hand cost in some cases. Where an expert hand laster could process 50 pairs in a day, the lasting machine spewed out as many as 700 pairs! A welt machine was fifty-four times as productive as hand sewing by awl and needle. The shoes themselves changed only in detail, but the process of manufacture shifted from a single skilled trade, carried on by a craftsman from start to finish, to a mass production process involving hundreds of operations per pair, most of them done by machine. Workers no longer owned their tools; they had no part in designing the machines they were suddenly forced to operate, and no way of predicting what operations would next be mechanized. At a stroke they lost both their security and their pride.

In 1868, the craftsmen joined the Knights of St. Crispin in a forlorn attempt to stem the tide of mechanization. This union collapsed in 1872, and not until sixty-one years later did a strong labor organization appear in Yankee City, following the strike we have just witnessed. By this time all the old craftsmen were dead, financial interests in New York had bought out the local shoe factory owners, and the last link of control within the town was broken. Shoemaking in Yankee City had become a strictly impersonal, pecuniary treadmill, for a distant, uncomprehended market. The New York control might speed the factories up or close them down; nobody in authority seemed to care.

So the "American Dream" dimmed and faded out in the shoe

factories of Yankee City. Warner's men had finished reconstructing the story and come to the end of their long trail. They understood now why workers had marched out as one man on that cold March day and joined the union. At the same time they made it very clear why the American labor movement has grown from 2 million to 16 million members in recent years. What they found dovetails with the experiments at Hawthorne.

Support from anthropology

It dovetails, too, with the conclusions of Melville Herskovits as set forth in his book *The Economic Life of Primitive Peoples.* The outstanding difference he finds between a handicraft society and a machine society is that men and women in the former can themselves control the techniques essential to getting a living. If there is specialization of labor, the craftsman seldom depends for his livelihood solely on his specialty. He also has a fishing boat, a cornfield, or some other anchor to windward.

Even more striking are the implications of the fact that among primitive people the outstanding type of specialization known to us is but rarely encountered; where the worker, hired for wages, and employing materials and machines with which he can in no way identify himself, must restrict his activities to but a minor operation. Specialization within industry does occur among primitive peoples—as where an individual is expert at making part of a canoe. But again, almost without exception, such a worker is found to be a full-fledged member of a larger co-operative work group, and psychologically has no difficulty in identifying himself with the finished product. . . . Without in any way indicating that there is an "instinct of workmanship," but recognizing that in the unconscious processes of identification, a satisfaction is achieved if, at the end of a day or a week or a year, a worker can point to something of which he may be proud . . . in which he retains a sense of creativeness—this . . . is of the greatest importance.

Dr. Herskovits goes on to show how a craftsman in the Andaman Islands will spend hour after hour laboriously striking pieces of iron with a stone hammer, or improving the shape of a bow, even though there is no conceivable necessity for such perfection. "The incentive is evidently a spirit of emulation . . . to produce work which will excel, or at least compare not unfavorably, with that of his neighbors."

Parallels for this deep-seated drive are on record in all countries and all ages. It finds almost no outlet in the shoe factories of Yankee City.

Constructive suggestions

It seems to me that social scientists have shown us conclusively why there is trouble in the factories. What have they to say about reducing it? No complete program to solve the labor problem has been presented. But diagnosis must always precede remedy and it is a great step forward to know where the major difficulties lie.

The two chief principles for constructive action have been made clear enough: first, restore the workers' status and sense of importance, and second, make the work situation an integrated part of society. How to do this, however, is another and difficult question.

Let us follow F. J. Roethlisberger's ideas on this score as set forth in the *Harvard Business Review*. He first outlines the structure of a modern factory.

1. At the bottom are people called *employees* who are supposed to conform to changes which they do not originate; to do what they are told to do, and get paid for it. Immediately over them are

2. People called *supervisors*, who again are merely supposed to uphold the policies and standards sent down by those above, including

3. *Technical specialists*, engineers, cost accountants, efficiency men, who are supposed to originate better methods of output and control, to aid

4. The *top management men*, who assume that the major inducement they can offer those who work for them is more pay. Top management assumes that it is providing a livelihood, not a way of life; that informal groups in the factory are either "bad" or not present; and that all authority comes from the top with no decisions allowed at the bottom.

The whole theory of top management in respect to dealing with workers dates back to the eighteenth century, when it was assumed that society was composed of a rabble of unorganized individuals, and that these persons were interested solely in a logical pursuit of profit and pleasure—the Economic Man idea.

In the face of these almost universal assumptions by management, the workers' desire to belong, to be a functioning part of a

group, their desire for continuous and intimate association at work with other human beings—surely one of the strongest desires of man—is sidetracked if not completely denied. In following this desire man is essentially nonlogical, that is, willing, as management should know only too well, to "cut off his nose to spite his face." So management has given us, on the one hand, a great mass of technical achievement such as no civilization has ever dreamed of, and on the other hand "the seamy side of progress," a generation of restless and frustrated human beings.

Dr. Roethlisberger believes that managers must learn better what goes on inside their organization. All they know now is the formal structure as outlined on the organization charts. It is the informal structure which counts most, and that is an unknown continent to most top managers today.

Managers also need to learn a great deal more about semantics and communication, both from the top down and from the bottom up. Unless men and management are in constant communication they are like infantry cut off in a battle at night from the staff. Techniques for setting up machinery to air grievances, interviewing programs to let off steam—as at Hawthorne—come under this head. So do polls of worker opinion, a rapidly growing technique.

Again, management should learn to let workers participate in setting standards of job performances, so they can feel they have a personal part in the output. To the same end management should encourage suggestions from workers to improve methods or product, with fair payment for suggestions accepted.

During the war, labor-management committees proved very successful in plants where there was a responsible union, and where top management unreservedly cooperated. Many of these committees are still operating. Another constructive activity is found in the Training Within Industry courses for foremen mentioned in the last chapter. Here is an unlimited field in peacetime as well as wartime.

But perhaps most important of all, says Roethlisberger, the coming type of manager "will have to learn to distinguish the world of feelings from the world of facts and logic. . . ." Can we develop administrators of such Olympian dimensions? There is Leighton's work as a foundation; and Jenkins' work on the "nom-

inating technique." Roethlisberger thinks that the job can be done. If only ½ of 1 percent of the time, effort, and money, he says, that have been spent in improving machines were to be devoted to the mechanics of human nature a great deal could be accomplished. The Manhattan project cost 2 billions. Half of one percent is $10 million—which would pay for a lot of Hawthorne and Yankee City and Poston studies.

It just does not seem sensible to suppose that man's ingenuity, if given free scope, would fail in this undertaking. The task is tremendous; the challenge is great; the stakes are high; but only by traveling some such arduous road, can business leadership face up to its real social responsibilities.

Research and more research. If the past is any guide, the labor problem will not be solved by emotion, hunch, intuition, paternalism, or even common sense—although more of the last could be used. It will not be solved by congressmen passing laws to get even with John L. Lewis or Caesar Petrillo. It will not be solved by smart lawyers showing union leaders how much they can get away with. It will not be solved by communism or any other brand of ideology. The human situation in Russian factories is said to be just as unhappy as in our own. It tends to be unhappy, indeed, wherever there is a factory.

It will be solved, if at all, by continuing the kind of work done at Hawthorne and Yankee City; by the vigorous application of the scientific method.

CHAPTER 15

Measuring Public Opinion

IN RUNNING this chain and compass survey I have found a number of experts who believe that after the culture concept in anthropology, public opinion research is the outstanding accomplishment in social science. The polls are so recent that they belong to none of the accredited disciplines, though the sociologists, always alert to explore new territory, have staked out a claim. Neither Mr. Roper nor Mr. Gallup would, I suspect, admit to being sociologists, though both of them rather like being called scientists.

Whatever we may conclude about their relative position, the polls have helped to vindicate political democracy and they are certainly news. It is hard to pick up a paper without finding a Gallup report on what people think about the Marshall Plan, or a Roper survey on when people expect the next depression, or who ranks whom by virtue of a Hooper or a Crossley rating on the radio.

The great Literary Digest *fiasco*

In 1936 the *Literary Digest*, having gone to great expense in the collection and tabulation of millions of post cards, reported that Alfred M. Landon would be overwhelmingly elected president. When the actual returns showed that he had been overwhelmingly defeated, the *Literary Digest* as a vendible property presently folded up. It was obvious that something was very wrong no matter how carefully the post cards had been counted. George Gallup and Elmo Roper, on the other hand, newcomers in

the field and almost unknown, correctly foretold the election of Mr. Roosevelt. Was this just luck? No; they had used a scientific method accurate for that day,[1] whereas the *Literary Digest* had neglected science.

If we study the difference between the *Literary Digest* poll and the Gallup and Roper polls in the 1936 election, it does not take long to grasp the basic theory on which the new science rests. We have to learn, however, the technical meaning in which poll-takers use two special terms: "universe," and "sample."

By "universe" they mean the total population being studied. In this election case it was the voters of all the 48 states who would go into booths and pull a lever, or mark an "X," on a November day in 1936. We see them in our mind's eye, millions of them, from Oregon, from Alabama, from Maine, arguing, debating, finally ready to go and vote. What an enormous sea of people! Naturally, no poll-taker can afford to ask every one of this great "universe" in advance how he will cast his ballot. The government asks on election day at a cost of many millions.

What then can we do? We can pick out a *sample* of the total population and ask them. How can we be sure the sample represents the "universe"? Here we will have to stop and think for in the special meaning of sample lies the crux of the technique. Clearly, the sample ought to be exactly like the whole collection in every respect except size. It should have precisely the same divisions or classes as the universe it represents.

What are the main divisions of the voting population of the whole US in 1936? Well, both men and women will vote, so the sample should include them in the same relative proportion. Negroes will vote—at least in some states—and we must get them in for the states where they will vote; and farmers, and rich people, middle-bracket people, old people and young, poor people, factory workers. The sample must show all the main groups in the correct proportions.

Good; the denouement of our story is right here. Messrs. Roper and Gallup got all the relevant subgroups in, while the *Literary Digest* did not. The *Digest* based its conclusions on a sample which was "biased" statistically, that is, it did not represent the people

[1] But not yet accurate enough, as the election of 1948 made clear. For comment on that election see page 182.

who would actually go to the polls. The post cards came from telephone book names in considerable part, which gave an upper bracket bias. Poor people have votes but not always telephones.

The *Digest* also depended on people who had the clerical habit strongly enough to mail a post card. But voters who are good with a monkey wrench may not like to fool around with post cards—they get all inked up. So the *Digest* accumulated a second bias in the same direction—toward the more educated, conservative, and prosperous section of the community. The prosperous are traditionally skewed in the direction of the Republican Party. Thus the *Digest* had no difficulty at all in winning the election for Landon—and oblivion for itself.

The great value of the theory of sampling now becomes plain. If there is a way to get a true sample we can find out things about the total aggregate, or universe, at a small fraction of the cost of taking a complete census. Not only can we answer many more questions, but we can answer any one of them far more rapidly. The technique has both coverage and speed. It applies to many kinds of aggregates, inorganic as well as organic; to marbles, grain, nails, sheep, trees, mass-produced articles, anything which has some uniform characteristics. (In the next chapter we will briefly trace the history of sampling.)

When it comes to people and groups we have a way to cheap, accurate information about many aspects of the population—their votes, their incomes, their jobs, their houses, their health. Roper claims that by asking 5,000 Americans whether they expect, say, to take a vacation in the next six months, he can get within a few percentage points the same answer that 100 million adult Americans in a complete census would give. He believes his 5,000 can offer a reasonably accurate sample of the 100 million. If he is correct, and there is strong reason to suppose that he is, consider the staggering saving in cost: *it is in the order of 20,000 to 1!* Incidentally, here is the reason why *you* have not been polled. You have only one chance in 20,000 of being asked this particular question.

Until scientific sampling came along, no leader, politician, reformer, stand-patter had any objective way of knowing what the people really thought about public issues. They relied mostly on intuition, wishful thinking, or black pessimism about the in-

telligence of the rank and file. Congressmen tended to draw conclusions from their mail, which provides a perfectly terrible sample of a congressman's universe. Only very angry people, or very earnest and literate people, or people gently prodded by the Edison Electrical Institute write letters and telegrams to congressmen. As an example, Congressional mail in 1941 ran 90 percent against the draft law. But careful polls indicated a majority of all Americans in *favor* of the draft. The bill won by one vote, you remember.

How to run a poll

Polling public opinion began in earnest along about 1900 with "straw votes" for president, mostly conducted by newspapers. They were highly inaccurate but popular, for people liked to read about the way the wind was blowing. By the 1928 elections, no fewer than sixty-four such polls were taken. The *Literary Digest* might be said to be the most majestic and the last of the straw votes. Newspapers true enough still run "inquiring reporter" columns, in which the journalist stops five people on Main Street and asks them if they believe woman's place is in the home. The replies though often amusing are meaningless as a reflection of public opinion.

To run a poll today is a major operation, in which an amateur would do about as well as he would trying to produce sulfathiazole in the kitchen sink. If the "universe" is all the adults in the USA, as many as 400 skilled interviewers may be needed, stationed at strategic points throughout the country. The subject matter has broadened and developed far beyond the forecasting of elections. Presidential polls were useful in verifying the technique and popularized the idea in an impressive way. Their social significance, however, is about on a level with a horse race. Most of the poll-takers would now like to get out of them.

Perhaps the best way to understand this significant new development of social science is to follow a poll dealing with a public policy question, from beginning to end; and note the steps involved. There are eight of them, as follows:

1. The selection of the question.
2. The selection of the universe.
3. The selection of the sample to represent the universe.

4. The phrasing of the question.
5. The testing of the question on a sample of the sample.
6. The training of interviewers, and their performance in the field.
7. The tabulation of the interviewers' notes.
8. The formulation of conclusions, and the writing of the report.

We will consider each of these steps in turn, relying frequently on a technical article written by Eleanor Maccoby and Robert Holt in the *Journal of Social Issues*. You may ask why not save the cost of door-to-door interviews and send questions by mail? Because, as the sad case of the *Digest* made only too plain, mail returns introduce a systematic bias. If the universe consists of college professors only, then a mail questionnaire may be satisfactory—assuming enough professors reply.

Step 1: Selecting the question to be polled

Suppose that you are the director; what do you want to ask people about? Granted that it would be interesting to have an answer, is there any reason to believe that enough citizens know anything about the topic to make the answer significant? You had best not try "free enterprise," for only three Americans out of ten have any idea what "free enterprise" means. Many think it is something you give away, like premiums for soap wrappers. People need *background* before they can answer a policy question —unless you are polling specifically to determine the lack of background. Again, even if people know about the subject, do they care? This opens up the important matter of the *intensity* of public feeling. Questions which carry low intensities may not be worth the cost of polling. Again, how *permanent* is the reaction likely to be? Questions subject to large and sudden changes in popular attitudes are less meaningful than those which have more stability.

In brief, your task here, as director, is to select questions which are meaningful and lend themselves to the polling technique. There may be a number of fascinating things you would like to ask but unless you are careful, the results will be worthless. In my opinion, to make a wild guess, more than half of the questions asked by accredited pollsters since 1936 should probably never

have been attempted. The fact that a result carries a nice percentage, sometimes to the second decimal place, is no guarantee of its validity. A mathematical product is never better than the data on which it is based.

Step 2: Selecting the universe

Will the universe be the whole adult population of the USA, or Negro sharecroppers in Mississippi, or Ph.D.'s in sociology, or unskilled workers in the Ford Motor Company?

An actual poll of all Ford workers in 1946 showed that 66 percent of them believed no effort had been expended to make them feel that they were a part of the company or important to it, according to Henry Ford II. Roper, who took this poll, has been sampling US workers for years asking them what they want most. A definite pattern has emerged, one of those glacier-like patterns not subject to rapid change. The workers want, in order: (1) security, (2) opportunity for advancement, (3) to be treated as human beings, (4) to feel that their work is important. This result, interestingly enough, tends to confirm W. I. Thomas' "four wishes" of mankind. It also checks with the Hawthorne experiments.

Step 3: Selecting the sample

How many Ford workers would you have asked in the above case? How would you pick them out? Some individuals must be selected from the universe in such a way as to represent all the people in the universe. Here the process begins to get really technical and the amateur goes completely out of his depth. You choose among various alternative methods: "random sampling," "stratified sampling," "quota surveys," "area surveys," and so on. Your choice will depend on the characteristics of the universe.

Random sampling means using some automatic method of choosing which gives each individual in the universe an equal chance of being included in the sample. If one is sampling a universe of marbles, random sampling is quite satisfactory. It can be done by picking up a handful anywhere, though perhaps it would be a good idea to shake the whole collection first.

If, however, one is sampling people for a single characteristic, random sampling is more complicated. Suppose we want to

know how many people in the Elks or the Zebras are church members. Here is the membership card file with tens of thousands of names. Open any book at random and take the last digit on the page number. If the page is 64, take 4. Good, we will start with the fourth card in the membership file, and then take every hundredth card thereafter. If we want to work to a larger sample and thus a smaller margin of error, take every twentieth card. Many prior experiments have proved that when some person, however wise, tries to pick the sample, bias usually gets in. Using probability theory it is possible to compute the size of the sampling error, that is, the deviation from the results if a full count of the universe had been made. "The science of sampling," says Angus Campbell, "has reached the point where it can select unbiased samples of known probable error to represent virtually any universe a surveyor is interested in."

When the units in the universe are not free flowing like sand or marbles, they are said to be "clustered." When this happens the sample must have similar clusters. Gallup and Roper made clusters in 1936, the *Literary Digest* did not. If bias is present—that is, if your cluster formula has incorrect proportions—it does no good to increase the size of the sample. You just compound the errors.

This third step, as you see, meets the test for the scientific method. As Julian L. Woodward has said in the *Political Science Quarterly*: "The development of the statistical theory underlying small sampling, and of the techniques for taking small population samples in accord with the theory, represents one of the truly great scientific advances of the twentieth century."

The large practical question which presents itself in Step 3 is to select that method of sampling which, for a given margin of error—2 percent or 5 percent, or whatever is permissible—requires the fewest units in the sample. Thus the survey can be kept at rock-bottom cost with a minimum number of interviews.

Step 4: Phrasing the question

The proper wording of the question to be asked the public is as delicate a matter as that which confronts a suitor. Here the survey director must use his taste and sympathy and intuition.

He has no such body of knowledge to help him as in the theory of sampling. He is confronted, among other things, with a problem in the meaning of words, in semantics. What he must strive for above all else—with an exception to be noted later—is to get a completely deadpan question, remove all emotion-stirring words so the respondent can answer freely and spontaneously from his own inner feelings and attitude.

In 1939 I suggested that the TNEC hearings on Savings and Investment in Washington avoid emotion-stirring words like "spending," "Wall Street," "debt." My idea was that the workings of the economy could be better studied if the stereotypes of both left and right were eliminated so far as possible. I received quite a going-over from the conservative press for what they called "trying to whitewash spending." They failed to mention that on the same score I was "trying to whitewash Wall Street." The pollsters sit up nights doing precisely what I sought so unsuccessfully to do, figuring how to keep prejudices, moral judgments, trigger responses out of their questions.

It was found when Mr. Roosevelt was president that to put his name on a policy which was being polled was to increase its popularity—although not necessarily in the Union League Club. Out where votes are counted this produced a bias in favor of the proposal. "Do you think the US should send food to starving people in Europe?" gets more yesses than the same question with "starving" deleted. Observe, however, that if people actually *are* starving in Europe—as they are in 1948—then the word should be kept in.

In 1946 Roper ran an interesting semantic test. He matched two groups of people so they were practically identical samples. He proved it by asking various questions and getting percentage results which were very close. He then asked each group a similar series of questions except that for one group a new and ugly word was introduced, the word "propaganda."

The general topic was the usefulness of foreign broadcasts by the State Department. Group A was asked to select from three alternative positions, one of which read: "Some people say it is better to explain our point of view as well as give the news." The answer came back "yes," 42.8 percent. Group B got the following

wording, *and observe it is precisely the same question:* "Some people say it is better to include some propaganda as well as give the news." The "yes" reaction was almost cut in half, to 24.7 percent! It would be hard to find a better example of what an emotion-stirring word will do to people's opinions!

In Step 4, we have to decide whether to use "closed" questions, "open" questions, or a combination of both. Closed questions are those to which the respondent answers "yes," "no," "don't know," or selects one reply from a number of alternatives offered him. For instance: "If the election were held today would you vote for Roosevelt . . . Dewey . . . Don't know. . . ." The "*don't knows*" used to go down the drain in some of the polls, but now their importance is always emphasized. Public ignorance of certain questions can be measured by the percentage of "don't knows." Percentages based only on those who indicate a preference, adding up to 100 percent with the "don't know" vote excluded, give a badly biased conclusion.

A more complicated closed question takes this form: "Which of these comes closest to expressing what you would like the US to do after the war:

"1. Enter into no alliances with other countries?

"2. Depend on separate alliances?

"3. Take an active part in an international organization?"

The respondent picks a number, or reports "don't know."

An open question, on the other hand, is not so clean-cut as the closed variety. It gets in shades of opinion and also may uncover the factor of intensity. The interviewer starts with a big general question and works down to cases, encouraging the respondent to express his views in his own words and think all around the topic. For instance:

"What do you believe will happen to prices in the next year or so?" . . .

"Why do you think so?" . . .

"What are you doing about it in your own buying?" . . .

And so on.

Open questions are often a better measure of opinion, but the interviewer must be better trained and work harder, with a much tougher job of coding and note-taking. Instead of ticking off a

"no," "yes," "don't know," he must take down nearly all the respondent says—and most of us like to talk. (There is an example of an open interview in the next chapter.) Sometimes it is advisable to combine closed and open questions in this fashion:

"Are you in favor of more money for China?" . . .

"Why do you feel that way?"

Another rule in phrasing questions is that they should ask only one thing at a time. "Do you think it wise these days to put money into real estate and securities?" is a bad question. George Adams may favor real estate and be afraid of securities, while his banker holds the opposite view.

The one time when it seems permissible to load a question is in polling for the extent of prejudice. The usual impersonal questions about race and religious prejudices will not be answered honestly. Many Americans are ashamed of their feelings against Negroes or Jews or Catholics. They will give stereotyped replies based on the best principles of the Founding Fathers. But when the interviewer says: "Well, we're through with that. Now tell me what you *really* think about those dirty Jews?" prejudice emerges from its deep den. Marie Jahoda reported at the Williamstown Conference in 1947 that this technique caused about a 25 percent shift in the replies.

Miss Jahoda also reported that when parents were polled about corporal punishment, 80 percent gave the textbook response: they were against it. But when followed up by a probe of actual behavior 70 percent of the same people were found to be spanking Junior. There would seem to be a fine chance here for anthropologists to use this technique in studying the lag between belief systems and tangible behavior.

Finally it appears, after much experimentation with Step 4, that if people are thoroughly steeped in the facts, and have reached firm conclusions, they will fortunately not be much affected by the order, context, or wording of the question.

Step 5: The test run

After we have the question worded to our satisfaction, the next step is to put it into the wind tunnel and measure reactions. In a recent study which I followed closely, 22 questions were first tried out on 100 people, preliminary to securing the ultimate

sample of 5,000 for a universe including all US adults. In this sample of a sample the interviewer should take down replies in full and ask respondents to explain in detail what they mean by their answers. Thus cloudy wordings come to light and can be corrected before the final survey.

An amusing case is given by Quinn McNemar. People were asked in an oral poll if they were opposed to governmental control of profits. A surprising number of low income citizens said yes, they were opposed. Probing brought out the belief that God, not the government, was the best agency for controlling prophets. A test run helps to expose such misunderstandings. This could not happen, of course, when people are handed written questions by the interviewer.

Step 6: The interview

Poorly trained interviewers can ruin everything we have arranged so far—the universe, the sample, the wording, the test run. It is easier to train them for closed questions than for open, but good judgment is always required of the interviewer. He needs it to get in the door, to get people to talk at all. As a matter of current practice, most interviewers are not he's but she's—intelligent matrons working part time.

An interviewer on an unemployment survey must never say: "You're not working now, are you?", but always: "Are you looking for a job now, or are you waiting for a while?" One reason for this is obvious: the respondent is permitted to keep his pride. Also an interviewer must never put answers in the respondent's mouth. "Do you say that because of the high cost of living?" will cause many a respondent to follow the leader with "Sure, that's why." Then bias is in.

Some critics believe that the interviewer is the weakest link in the whole chain. Certainly it is no task for the callous or for the untrained. In the next chapter we will listen to an actual interview with a Navy yard worker to illustrate the critical nature of this step.

Step 7: Tabulating results

The interviewer has made the rounds and his notes are now all neatly written up. They can be sent to a central office to be tab-

ulated by hand but the modern way is to make a punch card for each unit in the sample and then let a Hollerith machine do the clerical work. In no time at all it will sort and count the cards. Closed questions are easy to card but open questions require a far more complicated coding system. Indeed, coding is becoming a science in itself.

Step 8: Reporting the final results

The director of the survey now takes the machine percentages, talks them over with his staff, perhaps does a little weighting for this factor and that and sits down to write his report. Mr. Roper's reports you will find, among other places, in *Fortune* every month. Mr. Gallup's you will find widely syndicated in the newspapers. An an advertising client, you may be handed a special market survey of how your new washing machine is liked; or as a candidate for public office, a highly confidential report on what a sample of the sovereign voters think of your candidacy.

The director of the survey in rendering his report must not only explain clearly what the figures show, but also explain clearly *what they do not show*. The fatal human habit of generalizing from insufficient data can raise havoc with any poll not carefully guarded. The director must repeatedly caution his readers against generalizing the findings to a different universe than the one being measured. For instance, it may not be a majority of *all US farmers* who want corn prices underwritten at parity—but only a majority of *Iowa farmers* . . . and so on.

Roper has four excellent rules for any poll director:

1. He must remind readers that answers to all questions cannot be accepted at face value.

2. Conclusions cannot be invariably based on the answers to any single question.

3. The importance of "don't knows" must never be overlooked.

4. The same question, differently worded, might have produced different results.

To which I suggest adding a fifth warning. A different squad of interviewers might also have produced somewhat different results—small perhaps, but something to guard against.

With all due allowances it is clear that a powerful new engine

of social science is here in the making. It has been developed, furthermore, almost exclusively in America. Public opinion research is the joint product of probability theory, of college professors, of government experts and of businessmen—a curious but vital combination.

CHAPTER 16

The Future of the Polls

AN INTERVIEWER is sitting in the small bare flat of a worker employed in an Eastern Navy yard. The time is February, 1946. The interviewer represents the Bureau of Agricultural Economics, which is conducting a survey on people's savings and financial plans. It is a late development in scientific polling based on "area sampling" and open questions. Watch carefully what happens, for this little dialogue throws a strong light on the potentialities and the limitations of the polling technique.

The questions which the interviewer asks have all been carefully pre-tested and standardized. Heaven knows what the replies will be, however, in open questions like these. The interviewer must be on the alert, his memory in good order, and the code system well learned.

The Navy yard worker is forty years old, has had a grammar-school education, and supports a wife and one child. In reply to skillful and sympathetic questioning he has just told the interviewer that his income in 1945 was about $2,500, that he is now earning $35 a week, compared with $45 a year ago before the cutback. He does not mind answering these personal questions because he has been assured that his name will not be used, and that the purpose is scientific information useful to the country. Such a challenge is almost always met—as Dr. Kinsey also has found out.

Interviewer: Now that the war is over, would you say that you are better off or worse off financially than you were while the war was still on?
Worker: We are having a tough time making out. Up to November we worked 54 hours a week. Now we are cut back to 40 hours and it's terrible. The rent's the same—you can't move to a cheaper place because you can't find one. Everything is full up, so you have to pay more. Gas, electric light, insurance, everything keeps coming in just the same. My wife is a wonderful manager, but honestly I don't see how she does it.
Interviewer: What do you think things are going to be like for the country as a whole in the next year or so?
Worker: Well, if prices would only come down it would not be so bad, but they keep on going up. If they go up much more, and so many people are cut back, I don't see how we will exist at all.
Interviewer: As I told you, this survey is largely concerned with savings and spending. Do you usually plan to save some portion of your income, or do you meet your expenses, and then save what you have left?
Worker: We always have saved regular. My wife insists on it, but now we can't. During the war I had $12.50 taken out of my pay regular for bonds.
Interviewer: In a general way, what is your main purpose in saving?
Worker: We would like a home some day.
Interviewer: Now that the war is over, do you think that you will try to save as much as you have been?
Worker: We can't save at all now. Not that we don't want to!
Interviewer: In general, would you say that saving is more important or less important than it was during the war?
Worker: It is always important for a married man to save. We have the boy to educate.

To me, this dialogue from the interviewer's notebook, of which I have reproduced only a small part, tells more about measuring public opinion than many columns of statistics. You see them sitting there around the kitchen table covered with red-checkered oilcloth—the boy trying to concentrate on his long division; the wife who is such a wonderful manager hovering in the background eager to break in and not quite daring to. A picture so universal, so human, it almost hurts.

Yet it is set in a frame of rigorous science. This little family has been carefully selected by the mathematics of area sampling

to be part of a universe that covers the whole country. The interviewer has been drilled for weeks, and the questions have been tested in advance. Every attitude the worker expresses will be taken down in code, to be transferred to punch cards and run through machines. The conclusions which the machines grind out will be used by high governmental officials to guide policy.

If this is not science applied to human affairs, where shall we find it? We could search far in the social sciences for a more perfect case of adapting the scientific method to the study of human relations. Both the strengths and weaknesses of public opinion research come out in this interview.

The theory of sampling

Most of the techniques and problems of polling appeared in our eight-step series in the last chapter. A book could be written about each step, and some books have. Let us consider, to begin with, the strengths of the technique. It has a solid foundation stone, as already pointed out: the theory and practice of sampling.[1]

This procedure has been used, largely with material things, for thousands of years. An early example was sampling wine by tasting it—a few sips would define the whole vintage. Most of us use sampling to save ourselves work without realizing that we are on the edge of a scientific technique. The other day, for instance, when I wanted to know how many words I had written of this book, I counted the words on five typed pages chosen at random, averaged them, and multiplied by the number of pages. I knew through previous tests that the result would be within 2 or 3 percent of the true number of words. Every fall I estimate the average growth of about 1,000 small spruce trees on the hill behind my house. I measure with a yardstick 100 trees in sequence along a path, knowing that this will give me a figure close enough for my purposes.

The first use of scientific sampling in the social field seems to have been when Halley, whom we met in the Royal Society, employed the mortality statistics of Breslau in 1693 to draw conclusions about the mortality of mankind—and incidentally to

[1] In this section we will chiefly follow a paper on the history of sampling read by Frederick F. Stephan before the International Statistical Conference at Washington, September, 1947.

lay a basis for the insurance business. In 1800 Sir Frederick Eden estimated the population of England at 9 million using sampling techniques, and next year the actual census which counted the total "universe" confirmed the estimate. Sampling can be applied in nearly every field, both in the natural and social sciences. Among the most active uses today are:

Inspecting mass production articles and parts in factories. Johnson & Johnson, for instance, have 300 sampling stations in their factory at New Brunswick.

Estimating crop yields—widely practiced by the Department of Agriculture.

Calculating economic statistics, such as the number of unemployed, wages, prices, housing conditions—and thus saving the taxpayers' money.

Health surveys, crime surveys, youth surveys, indeed all manner of social surveys.

Public opinion surveys dealing with political and social questions.

Market research: to find answers to such questions as "What don't you like about Plymouth cars?" "What is your favorite tooth paste?" Also to measure the popularity of radio programs.

The depression gave sampling theory and technique tremendous impetus. The government needed figures in a hurry concerning the number of people unemployed, on relief, eligible for social security benefits, and so on. There was no time for a complete census; also it would have cost too much. Samples would serve the purpose within a calculable margin of error at a tiny fraction of the cost.

The war carried the technique much further. Samples were taken to appraise consumer wants, to determine housing facilities, the health situation, goods in short supply, prices, dealer inventories, public reaction to war measures, characteristics of selectees, soldier attitudes, effects of bombing on England, employee attitudes in war plants, radio listening, quality control of munitions, and many other things.

Yet, says Stephan, "great as these advances have been, they are only the forerunners of a broad expansion of sampling in the future. Further improvements in method are also to be expected." The polls of public opinion are thus only one outgrowth of sampling theory and practice. Whatever happens to the polls,

application of scientific sampling cannot fail to expand, as the above list of uses indicates.

Scientific strengths and weaknesses

Now let us look more closely at the opinion polls themselves. Their chief scientific strength lies in sampling theory and they stand to benefit by future advances in that theory whenever research adds more knowledge to the storehouse. Another source of strength lies in the techniques of compilation—the codes, the punch cards, and the incredible machines.

Certain difficulties are evident in four links of the chain: (1) Selecting the original question, (2) phrasing the question, (3) the role of the interviewer, (4) the interpretation of results.

Meaningless questions

I think serious poll-takers could profit by a study of Bridgman's *The Logic of Modern Physics*, which we referred to in Chapter 2. Here they will find a fundamental distinction between meaningful and meaningless questions. A meaningless question is one where no operation in the physical world can be performed to answer it. It is thus entirely verbal, inside people's heads; and individuals will have so many different ideas about it that to ask it in a poll is a waste of time. Here are some examples cited by Bridgman and others:

> May space be bounded?
> May time have a beginning and an end?
> Was there a time when matter did not exist?
> May space or time be discontinuous?
> Is heredity more important than environment?
> What is economic value?
> Is there life after death?
> Is art more important than science?
> Does labor create all wealth?

There are scores of questions like this which have been debated since the Paleolithic Age; but there are no answers to them—at least not yet, nor any prospect of a way to find the answers. Physicists refuse to fool around with questions of this type, and social scientists would do well to follow their example. If we

only want the fun of a rousing argument, meaningless queries are all right. Or they may have a use in appraising systems of belief, but only if the poll-takers use them deliberately.

Let us take, for instance, that timeless question: "Is man a free agent or is life determined by fate?" The ancient Greeks sat up nights on end with this one. But try to find an operation in Bridgman's sense to answer it. Look under the bed, out in the yard, down cellar, anywhere you like in the physical world. Sooner or later you will tire of searching and agree that no operation is to be found and the question to date is meaningless.

Bridgman's warning can help social scientists both in selecting questions which do mean something, and in phrasing them for clarity. The semanticists can also help with phrasing.

Other weaknesses

Another weak link lies in the work of interviewers in the field. On the doorstep, in the kitchen, on the street corner, two human personalities are in contact and in constant danger of distorting the record. Probably the training of interviewers will ultimately be a task for social psychologists.

Again, there is a measurable discrepancy between public attitudes, meaning those that people are willing to acknowledge, and private attitudes. We saw this in the questions about anti-Semitism in the last chapter cited by Marie Jahoda. The poll-takers are mainly interested in *verbal* responses, and these can be superficial if not actually misleading. This drawback is a lack of validity as distinguished from reliability. As long as a respondent sticks to the same answer whenever he is asked, the answer is usually considered reliable, even if it happens to be a lie!

The problem of evasion has not been wholly solved in spite of considerable research and many safeguards. Still less is there a clear understanding of *motivation*—the reasons people may have for answering as they do in a given case. How could it be otherwise in the absence of a dependable theory of human motives in general? The practical success of the polls has encouraged students to try to build a lofty theory upon them depending on a basic unit of behavior called an "attitude." Many psychologists are understandably dubious about "attitudes," and want to see much more research and a more convincing theory.

Danger signals

In addition to these internal or structural difficulties, there are dangers from the outside which beset the scientific investigator. As in other profitable fields, quacks and charlatans are trying to exploit it. Two cases have recently come to my attention. In the first, a high pressure salesman offered to do a poll for a congressman which would produce, he said, with percentages to the decimal place, *any result the congressman wanted.* In the second, an employee attitude poll recently taken in a factory whose labor relations were notoriously bad, purported to show it as having the happiest workers in town. Something was very wrong. The recently organized American Association for Public Opinion Research, which includes specialists from the colleges, from government, and from business, should appoint a good tough committee on ethics to reduce this sort of thing—as the doctors and engineers reduce quacks in their professions.

Another external danger, and perhaps a worse one, is polling people to death. I do not mean taking up respondents' time answering questions, so much as filling the papers with percentages of this attitude and that, until the public becomes thoroughly weary of the whole business. John Crosby, in his radio column in the New York Herald Tribune, recently complained as follows:

> . . . No industry is more hag-ridden by figures than broadcasting. Our tastes, our listening habits, our non-listening habits, our likes and dislikes, the reason for our likes and dislikes, the intensity of our likes and dislikes, are now being measured furiously, completely and incessantly. From these innumerable polls comes a mass of statistics which prove about anything the broadcaster or advertiser would like to hear. . . . Listeners are telephoned every half hour. Radio sets are wired to record the minute-by-minute listening of single families. Listeners are showered with postcards which request a yes or no and why not . . . while the Columbia Broadcasting System proposes to probe our likes and dislikes by radar . . . Radio is no longer guided by research; it is enslaved by it.

From Mr. Crosby's report it looks as if some of the boys ought to sit down and count ten.

Check on demagogues

With all due allowance for these difficulties, both internal and external, there is no gainsaying the enormous progress made since *Literary Digest* days. The very steepness of the growth curve may have made practitioners dizzy.

No responsible leader of opinion should now dare to tell us what Americans are, what they want, how they feel and behave, without a knowledge of the polls. Ever since 1776—and probably long before that—statesmen, editors, politicians, and parsons have been telling us all about Americans with the utmost confidence. They could be as brash as they liked because there was no way to check them up. All a critic could do was try to outshout them—and a politician is a hard man to outshout. At last there *is* a scientific way for checking up on them, and from here on these intuitive geniuses had better know what they are talking about or keep quiet.

". . . Mr. President, I represent the unanimous opinion of every man, woman and child in my great state. . . ."

"Very interesting, Senator, but why does this poll show that only fourteen percent of the adults in your great state agree with you, and that ten percent have no opinion at all?"

What a sweet sound this would make to one who loves facts and distrusts demagogues and dogmatic affirmations!

Employee attitudes

A significant new application of opinion research, noted in Chapter 14, is the polling of people in factories to find out what they think of company policies, of the foremen, the management, their jobs. I found a Roper survey an invaluable aid when I was making a study of labor relations in the Standard Oil Company of New Jersey. A story illustrates the value well. Mr. Roper was explaining the idea of the poll to a union meeting. The men were silent for a while. Then a union official slowly got to his feet and said:

"I'm for it; it's a good idea and here's why. I tell the management what the workers want. They want this and they want that, and I bang the table. So Bill here [the superintendent] he says no, that's not

what the workers want, they want that and they want this. And *he* bangs the table. But neither of us knows a damn thing about what the workers really want. So I'm for Mr. Roper finding out."

Polls of employee attitudes, if carefully done, can be invaluable in establishing communication and helping the whole new approach to labor management problems.

Wartime polls

Samuel Stouffer, now director of the Laboratory of Social Relations at Harvard, engineered many of the Army polls during the war. He had 10 million guinea pigs in his laboratory. Soldiers were polled repeatedly and asked what they thought about their food, about their equipment, their uniforms, the entertainment offered, promotion methods in the Army, deficiencies in leadership, methods of discipline, personal plans after the war. The soldiers themselves, via the poll technique, determined the point system of discharge. Subsequently the system never fell below the 70 percent line in GI approbation. It worked so well that even the Marines took it over, and when the Marines imitate the Army, that is news!

The Army knew two years in advance, within 3 percent, how many claimants there would be under the GI Bill of Rights. Think what the government saved by knowing what to plan for in this enormous particular! Rensis Likert found out by a poll that if the Treasury made it easier for people to refund war bonds, more would be bought, and *more net would stay bought*. This was contrary to some positive opinion in high financial quarters, but the Treasury trusted the poll, made the change, and got the results predicted.

OPA and WPB kept in close touch with the public by frequent opinion surveys. When a poll showed a bad public reaction to an OPA ruling in any city, trouble shooters were rushed to the spot before the grievance could grow. Sometimes the ruling was changed, sometimes a better explanation was given of its necessity. What a future in public relations this opens up!

A poll in June 1946 showed that 78 percent of Americans wanted OPA maintained for a while longer. Presumably they were afraid of inflation without it. Yet Congress killed the agency on the assumption that competition would reappear after its long

hibernation and bring prices down. Congress turned out to be wrong and the people right.

The outstanding accomplishment

This brings us to perhaps the outstanding accomplishment of the polls. They have given strong statistical proof of the wisdom of the people, and so have vindicated political democracy from a scientific as against a purely ethical angle. Time and again the polls have shown the majority of the people ready for a given decision ahead of their leaders, and several light years ahead of Congress. William A. Lydgate, of the Gallup organization, has written a whole book, *What Our People Think,* full of evidence on this point. His first chapter is entitled, following Carl Sandburg, "The People, Yes." He cites the poll vote on rearmament, higher taxes for defense, the draft, price control, wage control, rationing, an anti-strike law—all approved by the people ahead of Congress. In March, 1940, six months after the panzer divisions marched into Poland, the Army asked Congress for money to build 1,200 fighting planes. Congress appropriated funds to build exactly 59. Yet Americans were voting by nine to one majorities in favor of more air power!

The people to be sure are not always right, judged by subsequent events; but as Mr. Lydgate shows, they sense reality better than those whom they elect to represent them. The rank and file are soon lost when questions become at all technical, but when broad policies are put before them the polls support that profound warning by the late Raymond Clapper: "Never overestimate the people's knowledge, nor underestimate their intelligence."

A glance at the future

The measurement of public opinion on political questions is useful only in a community where people are unafraid to express their opinions. It is worthless in totalitarian countries for most questions of policy. In a democracy, the technique can keep the communication line open between citizens and their government better than letters to Congress, far better than pressure groups.

After the election in November, 1946, the Republican majority

in Congress naturally assumed that they had a mandate from the people. So they proceeded with various bills covering taxation, labor, government economy, and so on. These presently stirred up a whole row of hornets' nests and eventually increased President Truman's popularity percentage. Obviously, Congress did not have the kind of mandate it thought it had. A series of responsible polls could have informed congressmen what, in fact, they did have. Such information would not have compelled them necessarily to follow popular demands but would have let them operate in the light instead of in the dark. Elmo Roper would like to see polls run regularly by the government itself, with men at the top whose integrity rivals that of Supreme Court justices.

George Lundberg carries this to its logical extreme. "It may be," he says in *Can Science Save Us,* "that through properly administered public opinion polls, professionalized public officials can give us all the efficiency now claimed by authoritarian centralized administrators, and yet have the administration at all times subject to the dictates of a more delicate barometer of the people's will than is provided by all the technologically obsolete paraphernalia of traditional democratic processes."

Dr. Lundberg is beginning to practice what he preaches by setting up in the University of Washington a Public Opinion Laboratory to canvass the people of the state on such matters as the Marshall Plan, displaced persons, universal military service, the sales tax, extending government aid for medical care, oleo versus butter, housing, cost of living, radio preferences, and so forth. Seventy interviewers are being trained and a number of graduate students are expected to receive their Ph.D.'s in connection with the program. "The Public Opinion Laboratory," says the announcement in early 1948, "will search for scientific laws, for working principles in human relations."

Here is a broad and significant area for public opinion research in the future, namely, bringing leaders and followers together by establishing better communication lines. Other inviting areas can be found—in small towns, in school districts, factories, rural areas—to let factory managers, town planners, district leaders know what is bothering the local people and what they really want. There is no limit to the future of the technique on this front.

Samuel Stouffer's words are appropriate here. Polls, he says, can replace myths with facts when people are discussing current political questions in press, radio, barber shop. "We, as social scientists, have an obligation to make the tools better and better, and we as citizens have the obligation in and out of government to see that these powerful instruments are wisely employed. . . . There is no turning back."

Has the election of 1948 changed the conclusions to be drawn from the foregoing two chapters? Clearly presidential polling is no exact science. Does 1948's wrong prediction mean the downfall of present polling organizations, as the wrong prediction in 1936 caused the downfall of the *Literary Digest*? Does it mean, as some critics declare, that sampling theory itself is suspect and science can never be applied to human affairs? Certainly not. One error or a hundred errors cannot invalidate the scientific method. The critical point is what is done about correcting them. These 1948 election errors were followed by such a flood of analysis that scientific accuracy should be increased. Said one of the pollsters: "This will set back my business five years, and advance the science of public opinion research five years." The Social Science Research Council appointed a special committee to review the figures.

No one reason alone could account for the spectacular failure. Among those ascribed were some of the weaknesses pointed out above, such as the handling of "don't know" answers, and the training of interviewers. Most critics agree that the samples were adequate and unbiased, and would have correctly foretold the results if the voters had gone to the voting booths that day—all of them. If questions had been framed to record *intensity* of voters' preferences, the answers might have given warning. The strong feelings which Mr. Roosevelt inspired—both for and against him—tended to make early results far more reliable in 1936, 1940, and 1944. Voters changed their minds in 1948 on a scale unknown before.

Sampling is still a science, including opinion sampling. Presidential polls, if taken, had better not be published. I repeat that their social significance resembles that of a horse race. Probability theory has come a long way from the gambling odds of Pascal and Fermat; polling has far to go beyond the prediction of election returns.

CHAPTER 17

Is Economics a Science?

THE Republican Congressional leaders are preparing to go ahead with their plan to cut taxes, but economists disagree as to whether a reduction would be inflationary or deflationary. Those fellows have the whole thing down to an inexact science."

As one who has frequently been called an economist I confess that my mirth at Howard Brubaker's crack in the *New Yorker* is somewhat forced. Our "science" is fortified with many learned theories, many impressive curves and graphs, and some of the most devastating mathematics ever seen on land or sea—but repeatedly it proves unreliable for prediction, the final test of science. George Soule once wrote a book called *The Useful Art of Economics* but one may ask—and many do—how useful is a body of doctrine which says that things are bound to go up which then go down, and sure to go down which presently go up?

In this chapter and the next we shall deal mostly with social science$_2$, with theories, hypotheses, and assumptions which have proved enormously stimulating and interesting to men for a century and a half, but which often lack adequate verification. We shall offer a reason why perhaps some of the most general theories can never be verified.

Fifteen forecasts, 1925-1947

To illustrate the inadequacy of much economic thinking, suppose we pick at random some confident predictions of recent years. Unfortunately many more cases could be added with very little effort.

1. Following the almost universal prompting of leading bankers, financial experts and economists, Britain returned to the gold standard in 1925 after World War I. They were confident it would restore her economic position in the world. It did nothing of the kind. After six years of steadily accumulating financial difficulties Britain abandoned gold, probably forever, in 1931.

2. When Russia proposed her first Five Year Plan in 1927, it was laughed out of court by experts in London, Paris, and New York. Russia was bankrupt, they said, and where would she raise 60 billion rubles to invest in capital assets? Where would the money come from? At the end of five years the factories, power dams, railroads, transmission towers, schools, housing developments, steel plants were there, solid and substantial. Where *did* the money come from?

3. In 1928 there were not half a dozen economists in the United States who saw the looming depression. On the contrary, many were coming to believe that the business cycle had been smoothed out and a permanent plateau of prosperity had been reached.

4. After the stock market collapse in 1929, few financial experts would admit that it was more than a little swerve—and a healthy one at that. Prosperity, we were assured, was just around the corner.

5. In 1935 a noted financier and economist announced that unless the federal budget were promptly balanced, a dire inflation would threaten the nation with ruin. I remember it well, because I debated the question with him before a conservative audience in New York. He won the debate hands down but events failed to bear him out. The budget was not balanced and the inflation he prophesied never came.

6. When Hitler proposed to rearm Germany, the cry went up from the highest authorities: "Germany is bankrupt, she cannot even pay reparations; Hitler has no gold or foreign exchange; where will the money come from?" So people breathed easier to think of ragged, bankrupt Hitler.

7. A leading economist cited by Beardsley Ruml said in 1937 that unless federal expenditures were brought into line with revenues, the interest rate would rise to 6 or 8 percent. Deficits

continued as before, and the interest rate continued in the deep freeze.

8. In 1940 experts affirmed that with a federal debt of the staggering proportions of $45 billion it would be exceedingly difficult if not impossible to finance a program for defense and rearmament. It proved, on the contrary, surprisingly easy. In 1940 indeed there was not an economist in the country—including your author—who would have dared to believe that the credit of the United States could shoulder a debt of $280 billion by 1945 and survive.

9. As we entered the war economists sternly bade the nation choose between guns or butter; we could not have both. We got both—the mightiest assortment of guns in human history, and a volume of consumer goods slightly greater than before the war, though differently divided among the population.

10. In the fall of 1941 a flood of articles and news stories assured us that Japan presented no real danger. The long years of war in China had exhausted her resources; she had no gold and was nothing but a hollow shell economically. Pearl Harbor came as these pronouncements were at their height. I have a file of them for some museum.

11. In 1943, the Bureau of Labor Statistics estimated that there would be 7 to 12 million unemployed six months after V-J Day. The actual number in March, 1946, proved to be 2,710,000. Unemployment during reconversion never went above 3 million. (Counted, by the way, by the "area sampling" technique.)

12. Early in the war economists were having nightmares over what they ominously called the "inflationary gap." The gap never opened—not, at least, in any ominous way. Citizens did not spend their money the way economic theory said they should.

13. Many economists opposed any plan for general price control at the beginning of the war. It was believed to be unworkable and would only make the price situation worse. As J. K. Galbraith said: "Standard pedagogy had emphasized this conclusion quite literally for generations." The OPA was introduced nevertheless, and worked astonishingly well, holding most prices within narrow limits throughout the war period.

14. In the spring of 1947 most expert opinion held that the peak of price inflation had been reached, as the merchants of

Newburyport made their celebrated 10 percent cut across the board. A well-known business survey announced that signs of a business recession were abundant, and that it would strike in the late summer. August came and golden September, and all lines continued their mighty zoom into the stratosphere.

15. On July 3, 1946, as Congress was enthusiastically dismantling the OPA, the National Association of Manufacturers ran full-page advertisements headed:

THE FUTURE WITH CONFIDENCE

If price controls are permanently discontinued, the production of goods will rapidly mount and, through free competition, prices will quickly adjust themselves to levels that consumers are willing to pay. . . . Then as production gets rolling again, supply will catch up with demand . . . prices will be fair and reasonable to all.

For at least twenty months thereafter, prices for most goods continued going up. What happened to the leveling power of free competition the economists employed by the NAM have never satisfactorily explained.

Business economists, government economists, labor economists, great bankers and fiscal experts, college professors, editors, your author—all have missed the boat by the most alarming margins. What is the trouble? No other branch of the social sciences which we have been examining has such a record. Reviewing it, one can scarcely be surprised that the man on the street thinks himself an economist as good as the professors.

Theories in vacuo

There must be some sound reason why such grave errors keep coming from serious and intelligent scholars. Various explanations have been offered by members of the fraternity as well as by outsiders. The *Economist* of London has put its finger on one source of the trouble. As perhaps the leading economic journal of the world the *Economist* speaks with authority:

Economics is a curious science, if indeed it is a science at all. The investigator who digs down through the text book generalizations in the physical sciences finds at their root a series of facts, checked by carefully controlled experiments, and as accurately known as human

ingenuity can compass. The investigator who does the same for economics, penetrating the smoke screen of curves and mathematical symbols, will find not facts, but a series of elementary psychological assumptions checked, if at all, by crude common sense. And, like most assumptions of this kind, he will find that most of them are wrong. . . . It is this lack of a solid factual basis which has brought it about that, while the Army is alleged to be always winning the last war, economists are almost invariably engaged in defeating the last slump. The characteristic of a genuine science is that its practitioners . . . can tell the practical man what to expect around the next corner. Economists may sometimes do the same; but as often as not they have to wait to formulate their theory until the practical man has himself turned the corner. . . .

There have been correct predictions, too. Roger Babson achieved a prodigious reputation by forecasting the great slump of 1929 in his business letter a few weeks before it struck. But observe, if economics were a science, the majority of the profession would have checked his calculations and agreed with him instead of being practically to a man on the other side of the fence.

As things are now, one faction is delighted at the discomfiture of another school when a forecast fails to materialize. The anti-Keynesians were overjoyed when the prophecy of the Bureau of Labor Statistics about unemployment during the reconversion proved wide of the mark, as they had anticipated. But the man on the street took it as one more sign that *all* economists are unreliable. Real scientists take pride in their discipline and are concerned when careful forecasts go wrong. Can one imagine, for instance, a group of astronomers rubbing their hands and saying: "Splendid, Halley's comet never came around the way he said it would!"

Shaky postulates

One of the first things to note about economic theory is that it is dominated by two schools which largely contradict each other. The *laissez-faire* school holds among other postulates that the government must keep out of practically everything, while the Marxist school holds that it ought to get into practically everything. The former is preferred by most American economists,

the latter by many European. Schools form in the physical sciences, too, during the hypothesis stage, but when the facts come in their members unite. They must if they are to be scientists.

Elton Mayo has formulated some of the "elementary psychological assumptions" of which the *Economist* complains, in his book *The Social Problems of an Industrial Civilization*. He finds three of them at the bottom of classical economics—the doctrine which you and I were taught at school. The first, interestingly enough, also underpins Marxism.

1. Human societies are governed by "natural laws" which man cannot alter. (The "economic determinism" of the Marxists is also an assumption of natural law.)

2. When each individual seeks to serve his own economic interest exclusively, a higher harmony is established which cancels out the apparent selfishness, coincides with natural law, and makes for a maximum of production and wealth.

3. The intervention of government is fatal to this harmonious equilibrium, and must be kept at the minimum necessary for maintaining law and order.

One of the men responsible for this doctrine was David Ricardo. Trained in the London brokerage business, he did not have many facts about actual production and distribution to go on, but his powerful mind erected an imposing logical structure which came to be called *laissez-faire,* or leave things alone. The philosophy was never verified, says Mayo, but for a century and more students in all the universities of the Western world have been drilled in its syllogisms, and even expected to go out and run their businesses in accordance with it.

Dr. Mayo, from his post in the Harvard Business School, declares it impossible to square Ricardo with practical problems in business administration, or in labor-management relations. He cites Chester I. Barnard, president of the New Jersey Telephone Company, who complained some years ago that he could find no treatise in all economic literature which covered business organization as he had to deal with it day by day. Mr. Barnard finally had to write his own book about it, which he called *The Functions of the Executive*. Worse still, said Mr. Barnard, economists fail to recognize the extreme importance of *organization* as the principal structural aspect of society itself. That is,

the businessman is doing something out there in the real world which economists are supposed to interpret, but which they are mostly unaware of.

The rabble hypothesis

Society as viewed by the *laissez-faire* school, observes Mayo, consists of a rabble of unorganized individuals acting in a manner logically calculated to serve the self-interest of each, and yet by a curious alchemy called "natural law," achieving harmony in the whole. Anthropologists have not discovered anything corresponding to this state of affairs. Ricardian economics "is a study of human behavior in non-normal situations, or, alternately, a study of non-normal behavior in ordinary situations." The number of people activated entirely by self-interest is extremely small. Observe again the fourteen men in the bank wiring room at Hawthorne. In Mayo's extensive clinical work over a thirty-year period he finds that human beings relapse into exclusive self-interest only when society has failed them. Meanwhile Linton makes no mention of "natural law," and reports no Economic Man, except as an abnormal type.

The Ricardian postulates, in brief, run counter to the culture concept as it has been outlined earlier, where man is found to be not an atomistic unit in a human aggregate or rabble, but an integrated member—or desperately trying to be an integrated member—of a band, group, society, bound together by immemorial culture patterns. Ricardo perhaps can be excused, for Morgan had not made his first study of Seneca customs until after the *Principles of Political Economy and Taxation* was written. It is harder to explain why Ricardo's followers have consistently disregarded cultural anthropology and social psychology right down to the present day. Theirs has been a "self-sealing" doctrine.

Economists support Mayo

Mayo is an industrial psychologist, but many economists agree with him. As far back as 1914, Wesley C. Mitchell, now perhaps the foremost American economist, anticipated Mayo by emphasizing the lack of attention paid to the other social sciences. Economists, he said in the *Quarterly Journal*, have "tacitly imputed to the men whose behavior they were analyzing, certain

traits consistent with common sense and convenient for theorizing, especially the pleasure-pain principle. . . ." Meanwhile, psychology has abandoned hedonism as a governing principle of human behavior. The economics of both Ricardo and Jevons rests squarely upon it. Yet when hedonism was dethroned by the psychologists, were the theories of Ricardo modified by the economists? They were not, said Dr. Mitchell; it was ruled that psychology is no concern of the economist. "Thus economics is said to rest upon the simple facts of choice, and the psychological explanation is said to be a matter of indifference to our science."

This neat elision leaves classical economic theory so purified and rarefied that human nature has no place in it. Mitchell called for a restoration of human nature as the basis for economic assumptions. Only then, he said, will economics "cease to be a system of pecuniary logic, a mechanical study of static equilibria under non-existent conditions, and become a science of human behavior." This was a daring position for an economist to take in 1914, but everything which has happened in the intervening years has served to strengthen it.

Interoffice squabble

Edward H. Chamberlin in the *American Economic Review* for May, 1946, is discussing a paper of a brother professor in the same issue:

> Professor Knight has set out to find and describe the . . . "eternal and immutable" laws of economic theory. The result, however, is something which might more aptly be described as "Knight in a Nutshell"—a compendium of his own system of economics, including most of his better known prejudices. . . . How many would agree that "pure theory must undoubtedly exclude real money altogether?" And note the reason—it conflicts with "an assumption of foreknowledge free from uncertainty." My own reaction would be that if such an assumption leads, for purpose of "theory," to such a catastrophic departure from reality as to wipe money from the picture, it is time to get rid of the assumption. . . . We are told that the "eternal and immutable" laws of economics are "descriptive of reality." Yet a typical statement is the following: "Economic laws must be formulated on two assumptions . . . but the facts are largely contrary to both these assumptions. . . ."

And so on for several acid pages. This little interoffice squabble arises because Professor Knight's rigorous *laissez-faire* theory has no room for observed facts about "monopolistic competition." Professor Chamberlin has had the hardihood actually to look at large corporations like General Motors and E. I. du Pont, and he finds that they are competitive on one level and monopolistic on another.

Ceteris paribus

Horst Mendershausen of Bennington College in a long communication to the *American Economic Review* proposes that the standard freshman course in economic principles—the one you and I took—be abolished altogether "because there are no specifically *economic* principles capable of unifying our economic experience today." He would replace it with a course describing the social aspects of production and distribution. He says that since the great depression the doctrine of a self-regulating system of markets has lost its potency, and the theory of such a system has lost its relevance. The "other things" that economic theorists are so prone to assume "equal"—such as government controls, social aims, national policies, the gigantic new labor movement, war and atomic bombs—are the real determinants of economic activity. The "other things" are running the show, leaving classical theory an almost lifeless husk.

How *do* they run the show? Finding answers to this question is the real task for the modern economist.

CHAPTER 18

Theory Trouble

COLIN CLARK, as we noted earlier, left London in 1939 seriously disillusioned about the state of economic theory. He was particularly shocked by the practice of basing a book upon theoretical arguments, and then selecting a limited number of facts to illustrate the conclusion already reached—"thus effectively putting the theoretical cart before the factual horse."

Our own John M. Clark of Columbia is equally severe with some economic theorists.[1] They treat their theorems as end products instead of analytical tools, he observes. They believe in absolutes, not processes. They accumulate an intellectual vested interest in a theory, and refuse to discard a premise, however dubious, if it supports the sacred "equilibrium." Also they disdain plain English, preferring an esoteric dialect which few but the inner circle understand.

Academic economists, he continues, have refined their own received canon very competently, but "with great areas of deliberate ritual blindness to vitally important aspects of the world they are interpreting." They try to make a "science" by ruling out unruly facts. They also rule out all other social science on the curious assumption that it is "unscientific" to consider the human importance of things. In short, their thinking begins with a price on the market and fails to look around to see who makes the price and why. The Ricardian postulates are supposed to take care of that.

[1] "Some Current Cleavages Among Economists," American Economics Association *Proceedings,* 1946.

The mathematical school

John Clark is particularly concerned about the new school of mathematical economists—who can throw the price of soy beans on the Omaha market into a differential equation before you can say Adam Smith. "Mathematical economists," he says, "constitute a growing and able sect, using an esoteric method and a special language which make their results increasingly inaccessible to the rest of us, and a plea for communicability seems much in order." Their work is not complete without some objective outside verification of their concepts and premises to see whether they bear any resemblance to reality. "In manipulation, abstract symbols can be made to do things foreign to the nature of the economic realities they represent; hence symbols do not automatically eliminate loose thinking." Supply and demand schedules, he notes, are particularly dangerous areas for this high-powered mathematics.

Bassett Jones is of the same opinion. As an engineer and mathematician whose specialty has been high-speed elevators for skyscrapers, his equations are tested by the sternest kind of reality: one little error and the car goes through the roof. Mr. Jones has made economics his hobby for many years, searching for laws which conform to the scientific method. He has failed in that search and concludes that no one has yet presented adequate market data to demonstrate the *general* validity of such a cardinal economic law as that of supply and demand. Indeed, he finds in many specific cases that the alleged "law" works *in reverse.*[1] There is, he says, no such general market condition relating quantity and prices inversely as the literature holds.

Nor has Jones after diligent investigation found any scientific verification of the so-called "quantity theory" of money, which affirms that prices are a function of the number of money units in the system—that is, the more dollars the higher the prices. He says there is no direct measurable relation between the two, and challenges any mathematician to produce it.

He is also exceedingly skeptical of omnibus index numbers for

[1] But a Congressman was recently quoted in the newspapers as saying that he would no more question the law of supply and demand than he would question the movement of the tides.

prices, production, "business conditions," the cost of living. He says in his book, *Horses and Apples:*

> One man may spend much of his life evolving imaginary orders in his mind without any relation to things. . . . This man is a mathematician. Another man may spend his life finding out what physical things, if any, also have these same orders. This man is a scientist. But unless the scientist keeps clearly in his mind the difference between purely logical mathematical processes of thinking, and the more or less fixed nature of the orders found to exist between physical things, he may flounder into a bog. . . .

To the mathematician, two plus two always equals four. But the scientist who finds that two horses plus two apples equal four physical objects is exceedingly chary of attaching any significance to the figure four. In the premises it means nothing at all. One cannot add horses to apples, or multiply horses by apples, or divide apples by horses, and obtain a resulting number which makes sense. To do so violates the principle of dimensional homogeneity, says Jones, and he has powerful support from other competent mathematicians and scientists, including Lancelot Hogben, the author of *Mathematics for the Million.*

Without attempting to pass judgment on these high-powered equations, the curious onlooker can hardly fail to agree with John M. Clark that an outside authority ought to come in and give us an objective review of this situation. Far from increasing the prestige of economics as a science, any use of mathematics not firmly attached to measurable physical realities is bound to have the opposite effect.

The Big Three theories

The three chief variations of economic theory today are Ricardian, Marxian, and Keynesian. There are innumerable subvarieties such as the Single Tax, Social Credit, Guild Socialism (very popular in the early 1900's), and so on. All of them apply to the folkways and institutions of a single broad culture—Western civilization.

Marx based much of his theory on Ricardo, but with a special twist. Also he rested heavily on Hegel, a base which grows no stronger with the years despite its fine verbal roll of thesis, antithesis, and synthesis. Melville Herskovits takes a very dubious

view of Marx's economic determinism. It must be rejected as must any other simplistic explanation of culture. As an anthropologist he can find nothing to correspond to it in his studies. Anthropologists indeed have no more use for the economic determinism of Marx than for the "natural law" of Ricardo. As general principles, both are creatures of logic, not of carefully verified observation.

The meaning of John Maynard Keynes

It is possible that the late Lord Keynes discovered one piece of new economic theory good enough to go into the storehouse of social science knowledge. What he certainly did was to break up rigid patterns, Ricardian and Marxian, and provide a kind of bridge between theory and reality. Previously, as we have seen, there had been little connection.

John M. Clark, in the article referred to above, discusses Keynes with detachment and insight. Although it is still too early for a full-length biography, he says, we are beginning to get a perspective on the brilliant mind that shed so strong a light on the modern economic world, beginning in 1920 with *The Economic Consequences of the Peace*. Keynes' major thesis was that "the spending of income does not take care of itself automatically in such fashion as to tend constantly toward full employment." His chief battle was waged against the Ricardian assumption that it did. Keynes said, in effect, that when an economy starts up, or starts down, in a major cycle of inflation or deflation, leaders had better do something about it, not fold their hands and wait for invisible forces and natural law to set things straight.

In a downswing if consumers have no money to spend, and if businessmen are afraid to spend for new investment, then the government had better spend. This policy was as reasonable as it was heretical from the Ricardian standpoint, for it contravened the third postulate of *laissez-faire*; that intervention by the state is an absolute evil. But Keynes was no Marxian; to the day of his death he was a vigorous defender of free competition whenever it could be usefully employed.

Horst Mendershausen also presents an interesting summary:

When John Maynard Keynes asserted that market economy may produce persistent involuntary unemployment, and that it balances

itself by fluctuations of employment rather than by prices, wages and interest rates, he closed in effect the epoch of pure and systematic economics. . . . He confirmed the widespread feeling that society cannot renew the experiment of market economy without paying a price that it is obviously unwilling to pay: periodic and prolonged mass unemployment. However useful Keynesian theory may be as a stimulant to certain ways of action, it does not offer a positive system of economics.

Keynes himself, in earlier essays, outlined his fundamental approach. We stand midway, he said, between two theories. One theory maintains that wages should be arbitrarily fixed by reference to what is fair and reasonable as between the various groups in economic society. The other—the theory of the economic Juggernaut—is that wages should be settled by economic pressure, otherwise called "hard facts," and that our vast machine should crash along, with regard only to its equilibrium as a whole.

He emphasized that men in the breadlines, not prices in the market, are the more significant economic data. He split the academic guild wide open, and created a ferment among professional economists which rivaled the ferment Einstein had created among the physicists a generation earlier. Although Keynes produced no $E=MC^2$ to be verified by the Royal Society, his concept of the investment multiplier deserves a thorough testing.

He also formalized a feeling which more and more economists were beginning to share, namely, that Ricardian theory did not fit reality closely enough to warrant following its principles in a major depression. Meanwhile, not many economists, especially in America, were prepared to embrace Marxism as an alternative; it too was founded on exceedingly shaky assumptions. Keynes came to the rescue with a middle road, pragmatic program which said in effect: "Don't stand there hoping for a god from the machine; *do* something!" And he made some excellent suggestions about what to do.

Testing period

In the next few years the world is going to witness a significant testing of the reigning economic ideologies. They are all backed by massive folios of theory, but as we have seen it is not very good

theory; at best social science, at worst dogmatic assertions, containing the most alarming contradictions. Determined efforts are being made to apply these ideologies and theories as part of the so-called "cold war." The results will be interpreted by propagandists according to their political sympathies, but in spite of them the careful observer should be able to draw some interesting conclusions.

First, we are going to see what happens to "communist" ideology in Eastern Europe, where Russia has imposed some of her economic institutions on Poland, Czechoslovakia, Eastern Germany, Hungary, Yugoslavia. Communism is a kind of total immersion Marxism.

Second, we are going to see what happens to "democratic socialism" in Western Europe, the Marshall Plan countries of Britain, France, Italy, Western Germany, Belgium, and the rest. This ideology is much milder and more flexible than Marxism. It does not demand violent revolution or the destruction of civil liberties, but concerns itself chiefly with the nationalization of industries. ("Socialism," incidentally, is more disliked by the communists than is "capitalism.")

In some cases, such as Britain's coal mines, nationalization seemed to be the only possible course. Private owners could no longer operate the mines at a profit, yet people had to have coal, so the community took over. In other cases, such as Britain's steel industry, private owners are still able to operate profitably and efficiently, so nationalization would seem to be more ideological than practical. I imagine that Lord Keynes would have vigorously opposed it.

Third, we are going to see what happens to "free enterprise" in the United States. Already the postwar retreat to "normalcy" is faltering in the face of inflation, the series of government controls required by the Marshall Plan, the housing crisis, the threat of World War III. These are problems too big and too complicated to be handled on the principle of business as usual. We are going to see, too, what all the hue and cry about restoring free competition and enforcing the antitrust laws really amounts to.

Fourth, in the next few years we shall have the opportunity to observe the fate of the most admired item in all economic theory, beloved by Keynesians as well as by Ricardians, even

well spoken of by socialists—namely, international free trade. At Geneva in 1947, under the leadership of Will Clayton, some sixty nations agreed to give the world free market another trial—with various provisos. It will be interesting to watch whether the free market or the provisos win out. Already high tariff advocates in the United States are practicing their war cries.

We shall see. As good scientists we may regard these policies as experiments in four gigantic laboratories, allowing as well as we can for the complex variables. My guess is that not one of them will emerge triumphant. I may be wrong. What we can be reasonably sure of, however, is that in the event of failure, the proponents of each of the above ideologies—communism, democratic socialism, free enterprise, multilateral trade—will have a battery of rationalized explanations lined up and ready.

Is economics a science?

We are back at the initial question raised in the last chapter, and the answer, at least so far as *general* theory is concerned, seems to be "no." When one examines the operations going on inside the National City Bank, for instance, or in the Standard Oil Company of New Jersey, or the Social Security Board, or the Supermarket Institute, or the Hartford Empire Company, or the United Mine Workers Union, or the New York Stock Exchange, or the US Treasury—the dynamic happenings therein do not correspond to the economic theories about them, either Ricardian or Marxian. The universe of the atom has been carefully described, but not the economic universe—not in such terms that you can make an economic bomb with it. Economic bombs go off, true enough, but nobody knows exactly why.

For thirty years I have been reading economic literature, and as a professional accountant I have had an intimate view of many business enterprises. I have been through all the standard theories —*laissez-faire*, Socialism, Single tax, Social Credit, Keynes, the Cooperative Commonwealth. None of them fits the objective realities which I have seen. Keynes comes the closest, but as a general system his theory cannot qualify.

I have come to the conclusion—and I may be wrong—that the quest for an economic "system" is a forlorn one, as forlorn as the quest for a philosophical system. I have come to believe that

prices, wages, costs of production, profits are expressions of the economic behavior which underlies them—what human beings *do* about them. Such economic behavior, in turn, is only a part of cultural behavior. Economic acts therefore will often be irrational, will often be elaborated far beyond the necessities pursued by Economic Man, and quite incalculable on any "equilibrium" framework no matter how powerful the mathematics.[1]

The anthropologists and sociologists have made it plain enough, at least to me, that no human being ever lived who possessed the characteristics ascribed in the textbooks to Economic Man. No society ever existed which followed the "economic determinism" formulated as a cardinal principle by Marx and Engels. The perfect "equilibrium" is an economic Nirvana, beyond space and time. The great words go round and round, but I cannot make them connect except in the most spasmodic and discontinuous way with any reality I know. I do not seem to be alone in this conclusion. Such scholars as Mayo, Mitchell, the Clarks, and many others have come to a similar conclusion.

Little wonder then that the forecasts often fail to materialize. He who tries to formulate "pure" economic theory is like Alice trying to play croquet with no points fixed. The mallet is a live flamingo, the ball is a perambulating hedgehog, and the wickets are soldiers who like to get up and walk around.

If we can break away from the notion that there is one perfect, natural, right economic system to which mankind must adhere no matter what the concrete situation may be, our progress in solving specific economic problems should be more rapid. In a sense this was what Keynes tried to do. If we come to realize that economics is only one aspect of the science of man, closely allied with both the culture concept and social psychology, we will abandon quixotic quests for perfect markets, perfect equilibria, perfect revolutions, perfect states, and concentrate on techniques to halt *this* depression, curb *that* inflation, eliminate malnutrition here, adjust factory conditions to workers there, raise living standards as the curve of technology rises.

A good share of this book has been dealing with situations

[1] A possible exception may be Oskar Morgenstern's *Theory of Games and Economic Behavior,* in which probability mathematics is applied to the entrepreneur as behaving far more like a poker player than like an Economic Man.

which can in one sense be called economic—the experiments with workers at Hawthorne, the strike at Yankee City, the credos of Middletown, the testimony of the polls, the exponential growth of invention. We cannot tear this living fabric apart. Human society is all of a piece and a genuine science must treat it so.

CHAPTER 19

Some New Economic Tools

MANY of our large industries, like aircraft, chemicals, electric power, are based on the work of scientists, but few of our economic institutions are based on the work of professional economists. Most banks, brokerage houses, treasuries, ways of using money and credit, supermarkets, chain stores, labor unions, trade associations, the gold standard, the Grange, either just grew like Topsy or were blocked out by lawyers.

The founding fathers of economics—such great men as Adam Smith, Ricardo, Karl Marx—came along, looked over the scene, and retired to their studies to evolve those massive theoretical structures we have been reviewing in the past two chapters. It remained for Wesley Mitchell to call for exhaustive observation of what is actually going on as a necessary condition for the formulation of theory. In one sense most economists, until the great depression at least, had been making poems about business. These often fortified the businessman's morale, but did not tell him what to do—as Chester Barnard of the New Jersey Telephone Company complained. For advice on that he went to a first-class corporation lawyer, or accountant, or public relations man.

The depression and then the war put many economists to work on practical problems. From this experience came some remarkable new techniques and the shape of more than one new institution —for example, the Securities and Exchange Commission. The economists, furthermore, did not work alone but often in teams with lawyers, engineers, statisticians, sociologists.

Here and there, of course, ever since Malthus' famous mono-

graph on population, economists and political scientists have produced distinguished theoretical analyses of specific institutions. Some of them properly belong in the storehouse, having far more than historical interest. I should like to outline briefly two studies published in the 1930's that seem to belong in that class. They are Colin Clark's analysis of shifts in occupations, and the definitive work of Berle and Means on the modern corporation.

Conditions of economic progress

Colin Clark, tiring of economic "systems," has produced a solid book of facts and figures entitled *Conditions of Economic Progress*, in which he draws some useful and important conclusions. With a certain irony he quotes Bacon on the title page: "It cannot be that axioms established by argumentation can suffice for the discovery of new works, for the subtilty of Nature exceedeth many times over the subtilty of argument."

To handle the data he invents at least one new concept and one new measuring device. The concept is a classification of occupations and industries on three levels, while the measuring rod is what he calls an International Unit, defined as the average amount of goods and services which could be purchased for one dollar in the US over the decade 1925-1934.

Armed with these tools, Professor Clark establishes by exhaustive quantitative analysis two principal points. First, that the world as a whole is a long way from the age of plenty. Only the United States, Canada, Australia, New Zealand, Argentina, Great Britain, and Switzerland had, when he wrote, a standard of living of 1,000 International Units per worker per year or better. These countries account for only about 10 percent of the world's population.

Five hundred International Units, or less, was the lot of 81 percent of mankind. More than half the world, including India and China, subsists on less than 200 International Units. With so many human beings on the edge of malnutrition or outright starvation today in 1948—the headlines do not allow us to forget it—we can appreciate better the soundness of Clark's analysis. The economy of abundance holds good only in those areas where applied science and quantity production are energetically applied to both industry and agriculture.

The second point I think is even more important. He says:

> Studying economic progress in relation to the economic structure of different centers, we find a very firmly established generalization that a high average level of real income per head is always associated with a high proportion of the working population engaged in *tertiary* industries. *Primary* industries are defined as agriculture, forestry and fishing; *secondary* industries as manufacturing, mining and building; the tertiary industries include commerce, transport, services, and all other economic activities.

In the United States, Canada, Great Britain, Australia, and New Zealand, nearly half the working population was engaged in tertiary activities so defined. Often they are called the "service trades." In other countries of Western Europe, and in the Argentine, from 33 to 44 percent was so engaged.

With the growth of machine production, Clark's figures show a relative decline in primary industry (agriculture), and an increase in secondary (manufacturing). After a while the secondary industries reach a maximum and in turn begin to level off. This seems to have happened in Great Britain and France after the turn of the century, in the US around 1920, in Germany in 1925. Thereafter—except in the special circumstances of war production—only the tertiary industries, the service trades, *can be expected relatively to expand.* Common sense agrees with scientific analysis in this conclusion. As the machine contributes more energy, human beings are bound to contribute less. The number of jobs will increase in intellectual fields—the professions, education, recreation, government work, and the services generally.

This is a conclusion of great importance to the economic future of the world and one as yet inadequately appreciated. It amounts to a formula of mass production with a high probability factor, and close to a scientific law. It is close enough for me constantly to advise young people, when I am asked, that the service trades offer the widest opportunities for their future careers.

Modern corporations

Adolph A. Berle, Jr., and Gardner C. Means in *The Modern Corporation and Private Property* contributed another conclusion of great importance. They took a long, hard look at actual Amer-

ican corporations in the era of President Coolidge: what they owned, who owned them, what they did, how they priced their products, who controlled them. The 200 largest nonbanking companies in the country were selected, companies which together accounted for nearly half of all business activity. Dr. Means as an economist assembled the corporate statistics; Mr. Berle as a lawyer assembled the legal status or emphasized the lack of it. Thus they constituted a small but powerful social science team.

One effect of the study was to shatter various assumed economic "laws" of both Marx and Ricardo. The great corporations described, US Steel, International Harvester, and the rest, had little in common with the atomistic market—the little ironmasters and shopkeepers of *laissez-faire* theory. The legal owners, meanwhile, the haughty "capitalists," were found to be virtually stripped of their power by a new elite of self-perpetuating corporation managers who controlled the vast properties without owning them—something Marx had never foreseen. The leviathans thus were left swinging in a kind of property vacuum. As the authors put it: "Ownership of wealth without appreciable control, and control of wealth without appreciable ownership, appear to be the logical outcome of corporate development." A proxy is not a means whereby an owner of corporate stock controls his property, but a means whereby control is taken away from him. But if he gets his "conventional dividend" he does not normally complain.

For the 200 corporations, control was found to lodge as follows:

In self-perpetuating management	44 percent
In legal devices, including pyramiding, nonvoting stock, voting trusts, etc.	21
In minority interests	23
Total control without majority ownership	88 percent

Thus property has come to be a different sort of thing, and ownership a very different sort of function, than most textbooks stipulated. In many cases the great companies were found to be beyond and above the free competitive market. Either they were outright monopolies, like the manufacture of aluminum in 1930, or they practiced "monopolistic competition" like the great

tobacco or motor car companies—the condition described by Chamberlin in another famous study.

Gardner Means, in a later analysis of prices in the depression, showed conclusively that prices in markets where there was real competition tended to fall as demand declined. On the "administered" markets of great corporations, however, as demand fell, output was curtailed, workers were laid off, but prices were substantially maintained. Thus on the markets of America where actual things—wheat, pig iron, and motor cars—are sold, there is no one-to-one correspondence with any economic theory yet evolved.

Economists and the great depression

John Maynard Keynes, as we have seen, stimulated furious activity in economic circles. Nobody could write a paper without mentioning him. In due time some of his followers turned their attention to the formulation of programs to help the United States out of the great depression. Alvin Hansen, Lauchlin Currie, and many other able economists could be named. In cooperation with lawyers, engineers, political scientists, they helped frame such projects as the Securities and Exchange Commission, new banking and labor laws, the vast farm credit organizations, the AAA, NRA, FDIC, Rural Electrification, TVA, FSA, Social Security, and many more. Keynes had said, "Do something"—and they went to work!

The Tennessee Valley Authority may go down in history as the most important social invention of the era. It was a product not of social scientists alone, but of American science on all fronts together with the intelligence and foresight of statesmen like Senator George Norris. It provides an organic complex which may help to solve many of the acute problems raised by the machine age. The TVA combines overhead planning for the well-being of a great river valley with the production of cheap energy, with conservation, with improved patterns of agriculture, with the energetic stimulation of private business, with better transportation, with new recreation facilities, together with active participation by the people of the valley in many phases of the enterprise.

Social Security

The Social Security Board is another institution in which economists and other social scientists have had a hand. As a kind of insurance company it is based of course on the theory of sampling. But with upward of 80 million Americans on its rolls, it must deal with vast human problems, psychological problems, communication problems, economic problems.

The Baltimore division of the board is a cross between a factory and an office; a place where clerical records are mass-produced by high-speed machinery. Social Security officials have worked closely with engineers of the International Business Machine Company to develop the most extraordinary automatic recorders in the world; they do everything but talk. One of the arguments urged against the Social Security Act was that its sheer size would make the program impossible to administer. British experts testified that no organization could keep accounts for 26 million beneficiaries at the speed required. The 26 million American names grew to 76 million, while the time spent in settling a claim was cut from forty to twenty-three days! More names were handled in less time by relatively fewer clerks. It is obvious that in the Social Security Board we have science applied to human affairs in an impressive way. Indeeed, without an intensive application of the scientific method, we could not hope to maintain a social security system on this scale at all.

New Deal philosophers

"The New Deal" is generally referred to as an entity; but a moment's thought shows there could be no such thing in time and space. It is a label covering a series of Congressional and administrative acts over a period of about seven years. The people who originated and refined these acts—the FDIC, SEC, AAA, TVA, and the rest—had no settled philosophy at all. They were trying to stop the depression with any means which came to hand. Their efforts undoubtedly helped to stop it, but they never cured chronic unemployment. Not until the war boom of 1941 was unemployment liquidated.

There were two main ideas which struggled for mastery in the ranks of the New Dealers. I used to sit in at some of their

bull sessions and listen to the uproar. One group was for accepting Big Business, Big Labor, Big Government, and proceeding from that base with big over-all programs. The other group, heavily influenced by Mr. Justice Brandeis, was devoted to the idea of curtailing Big Business, enforcing the antitrust law, getting back to the grass roots and small units. Thurman Arnold was one of the leaders of this school, with his spirited campaign against the trusts.

There was, accordingly, no ideological unity among the New Dealers, no strong group of embattled followers of either Ricardo or Marx. As we have seen, there were some followers of Keynes, especially in the analysis of savings and investment. There were deliberate attempts, such as the Public Works Administration, to keep dollars moving according to Keynesian ideas.

Political opponents called the New Dealers agents of Moscow. The actual agents of Moscow, with headquarters in Union Square, called them lily-livered liberals and agents of Wall Street. History, I suspect, will record that the period was marked by intelligent young men, some with degrees in economics, some with degrees from the law schools, some as engineers or accountants or businessmen, working fourteen hours a day trying to find food and employment for a stricken people, trying to make the economic wheels go round again.

Lessons from the war[1]

The most important economic book written during World War II was a slim volume by Keynes called *How to Pay for the War.* It contained suggestions for holding down inflation which all the belligerent governments put to use in some degree, with the result that inflation was better controlled than during any other war in history. (Later it broke loose when controls were relaxed.)

In the United States a large proportion of the professional economists and statisticians went into government service. The pool of experts formed during the New Deal period was ready to be converted to war uses. After Pearl Harbor, the pool began to grow and subdivide like an amoeba, its members flowing into five main activities:

[1] On this subject we will follow studies by Paul T. Homan and J. K. Galbraith in the *American Economic Review.*

1. Price control and rationing.
2. The allocation of materials.
3. Techniques for financing the war.
4. Manpower mobilization.
5. Economic intelligence—such as finding out the economic condition of the enemy, preclusive buying to keep strategic materials out of enemy hands, and so on.

The "disequilibrium system"

J. K. Galbraith sums up this period and gives us a lively and penetrating account of economists in action, especially in the OPA. "During the second World War," he says, "the United States, partly by improvisation, partly by plan, developed a system for mobilizing economic resources that, by commonly accepted standards of performance, proved highly satisfactory."

In common with most of the other belligerents we employed the "disequilibrium system," by which Dr. Galbraith means that the normal market economy was suspended for the duration. The old motivations were supplanted by new forces for determining economic behavior, among them public control over economic resources, and control over prices, including rationing.

Ordinary market incentives proved largely useless in war. Automobile makers, for instance, would not voluntarily convert to tanks and bombers even when guaranteed large profits. Similarly, steel makers declined to enlarge their capacity. Finally, the government through the War Production Board had to lay down the law, telling automobile men and steel men what they must do if the war was to be won.

As prices on many markets had long since been "administered" by business management, Galbraith found that in this case "price fixing presents no problem of principle, and the war experience came close to showing that such markets are not the exception but nearly the rule. The designing of price regulation to fit the structure of such markets and their enforcement was OPA's ablest piece of craftsmanship." Thus Berle and Means were nicely vindicated. When war came, the government took over the control of prices from the large corporate or trade association interests which for years had been exercising that control, and the transition was a smooth one.

In those markets where free competition still remained, "price control must be supplemented by rationing. In spite of brilliant initial successes, this was the area of . . . failure in the operation of the disequilibrium system." But the failure was not the fault of the economists. The early rationing programs were ably conceived and ably executed. "A good case could be made that the rationing of meats, canned goods and fuel, were among the outstanding administrative achievements of the war." Meat rationing, in particular, brought order to markets which price control without rationing had reduced to chaos.

But as a result of a remarkable combination of bad politics and malignant stupidity, the fine beginning was presently reversed. "The honors for this piece of destruction rest with the commodity czars. . . ." The breakdown began with the novel doctrine that increased rations would be popular with the American people even though supplies were not available to meet them. Economists who designed the system had made the honoring of ration tickets its foundation. When this principle was breached by the commodity czars, the popular basis for rationing disappeared. The consumer was no longer assured of her fair share in a limited supply. First the integrity, then the usefulness of rationing was undermined.

Galbraith is sure that the demobilization of economic controls should have been more gradual. They were taken off in a kind of panic by politicians, urged on by some businessmen. "It is hard to suppose that anyone who sensed the mood of the country could have believed there was danger that these controls would become permanent. . . . One finds it strange that this disorganization was invited by conservatives. The gods must muse at the recklessness with which American capitalism is abused by its most vocal defenders." The controls were torn off, the National Association of Manufacturers assured the country that all would be well, and inflation promptly started upon its majestic way.

For all its rationing difficulties, the OPA, guided by such men as Leon Henderson, Galbraith, Don Wallace, and John M. Clark achieved brilliant success in holding prices. It was designed, launched, and administered largely by economists. Yet while it was in full career, Congress suddenly banned professional economists from holding administrative positions. Presumably they

had never "met a payroll," and did not know what they were doing. This was a savage and malignant thrust at social science. Scientists were not only saving the country's morale by holding prices firmly, but also saving billions of dollars for taxpayers. Yet Congress banished them to Siberia. Fortunately, Chester Bowles not only had met payrolls, but had the intelligence to carry on where the economists left off. Some remained to help advise him.

GNP

Everybody knows what the letters OPA refer to; not so many recognize the letters GNP. They stand for Gross National Product, which is an elaborate statistical compilation to estimate the total dollar value of goods and services turned out by a nation in a year. It is a rate of work and so a useful figure for peace as well as war, indicating levels of production, employment, and general economic well-being. A whole complex of studies have clustered around GNP. Isador Lubin believes that war production could not have reached the volume it did without this statistical information. He credits its inception to Wesley Mitchell's work on national income years before.

The illuminating economic models of the National Planning Association directed by Christian Sonne, the excellent studies of the Committee for Economic Development under Paul Hoffman, the extrapolations of J. Frederic Dewhurst in *America's Needs and Resources* carrying the figures on to 1960, all are based in part on the GNP analysis. This statistical device promises to be of great value in the years ahead. It will be constantly improved—perhaps to a point which will satisfy even Bassett Jones.

Thanks to the GNP studies, everybody who is interested in the financial shape of his world now knows that there are three, and only three, agencies which can spend dollars: (1) the ultimate consumer (2) the businessman expanding his investment, and (3) the government. Gross national product is the total of their combined efforts. If the total begins to shrink, the first logical step is to find out which agency is curtailing its outlays, and why. The second step is to offset the curtailment by stimulating one, or two, or all of the agencies. Here is the heart of the so-called "compensatory" program for maintaining permanent

prosperity which is coming increasingly to the fore. The famous full employment bill of 1945 was founded on it.

Other war activities of economists

Stacy May headed a brilliant statistical group in the WPB, which not only helped to procure the raw materials with which to fight the war, but *allocated* them between essential and less essential uses. The central control instrumentalities, such as the Requirements Committee and the Controlled Markets Plan, were largely devised and staffed by economists, including E. S. Mason, W. L. Thorp, Clair Wilcox.

Then there were a whole series of Anglo-American boards, some headed by economists like Thomas Blaisdell. There was R. M. Bissell in the War Shipping Board, C. A. Dearing in the Office of Defense Transportation, and Lauchlin Currie in the Board of Economic Warfare. There were economists in the Treasury advising on war loans, economists in the Bureau of the Budget and in the Federal Reserve Board. Marriner Eccles is himself no mean student of economics.

There was Harry White of the Treasury arguing with Lord Keynes as to the best form for the World Bank and the International Currency Fund—then known as the Bretton Woods Plan. As V-E Day drew near, the State Department engaged more and more economists to help prepare for the time when "peace should break out." Presently they were put to work on the details of the Marshall Plan for European recovery.

The war called for all the analytical and administrative talents which any classroom teachers of economics had ever concealed. It gave them full scope to show what they had in them. They responded magnificently but they worked within a closed system. The *end* was given: to win the war. Only the means were sought. But this wartime experience represented an important stage in the relation of economists to society. Thousands of them streamed across the bridge from theory to reality.

Some financial lessons of the war

Perhaps the major economic lesson of the war is the one underlined by the International Labor Office at its 1946 convention in Montreal: "a nation can afford anything it can produce."

The chief problem now, says the ILO, is not finding the money for any proposed capital expansion, but arranging the legal and administrative details. The ILO is undoubtedly correct for the long swing, but there is still a magnificent cultural lag to be overcome in the United States. The first problem here is neither financial nor administrative; it is cultural: how to make some powerfully placed Americans understand that what is physically possible is also financially possible.

Beardsley Ruml continues this theme. New discoveries due to war have not been limited to physics, biology, and surgery, he says. Great advances have also been made in the fields of finance and economics. The full impact is not yet understood, but we "know enough to know that some things which many competent people thought were true, are either false or true in a different way than was believed." For instance, during the 1930's most people believed that a budget deficit must have an inflationary effect. Now we know that this is not necessarily so.

"The plain fact is," says Ruml, "that the war was actually financed on a declining rate of interest. What does this mean? It means that a *new relationship* has been created between the private money market and the national state." To meet its expenses, a nation can either tax or borrow. Borrowing postpones the tax. In the past this has meant higher interest rates charged by the private money market as the national debt has grown. Thus the private market—in the United States we call it Wall Street—dictated the terms for government loans, and usually dictated the tax structure.

In World War II this system was finally outgrown. Financing became too great for private lenders to handle. The gold standard, which in the past had given some leverage to the private market, had gone. So private lenders and bankers no longer have the final word on the fiscal policies of the United States government, and control, says Ruml, must henceforth come from the whole community, not from lenders. Washington, not Wall Street, is now the financial center of not only the country but the world. "It follows that our federal government has final freedom from the money market in meeting its financial requirements. Accordingly the prime consideration in the imposition of taxes has become the social and economic consequences."

It is interesting to note that while Ruml was describing this great historic change in the relative positions of Wall Street and the US Treasury brought about by the war, Communist newspapers and radios in Moscow were reviving all their 1918 slogans, to the effect that Wall Street was out to dominate the planet. The Communists seem to suffer more from cultural lag than many American conservatives.

Maybe there is nothing to be called an "economic system" and therefore no laws foretelling its over-all performance. But if somebody wants to operate a Central Bank, or float a bond issue, or finance a war, or halt a depression, there are many useful tools now in the hands of economists to assist the process.

Both the great depression and the great war shook economists—especially those from thirty-five to fifty years of age—out of their classrooms into the market place—the real market, where they had to face the National City Bank, US Steel, Henry Kaiser, John Lewis, Ed O'Neal, and the embattled Cattlemen's Association. Their classroom theories were of little use to them in the disequilibrium system, but their habits of analysis and of suspended judgment, their ability to handle statistics, were of great value. They got rid of what Dr. Homan called their academic frustrations[1] by experience in practical policy making and administration. Whatever happens from now on, whether a huge rearmament program, inflation, or ultimate depression, we have a trained corps of practical economists to help us cope with it. Their techniques are now perfected far beyond the competence of the man in the street.

Seven projects

In conclusion, I should like to propose seven research projects to tighten up our economic knowledge.

Project 1. A far reaching study by competent psychologists of all the psychological *assumptions* of economists, from Adam Smith's "invisible hand," to Keynes' "propensity to consume." Mayo made a good beginning in puncturing the "rabble hypoth-

[1] ". . . long-standing frustration on the part of many economists that economic theory gave no answers to questions of economic policy . . ."

esis," but much more work needs to be done if economics is ever to be based firmly on the realities of human behavior.

Project 2. A complete and impartial review of omnibus index numbers where the physical items comprehended are not of the same order. Can we add horses to apples and get a total which makes sense?

Project 3. A determined attempt to set up a real forecasting service, so that statesmen and businessmen can get some dependable idea of what is likely to be around the next corner. Should this take the form of an improved count of the unemployed, showing trends? Should it entail more work on GNP trends? Or might it be something like Elmo Roper's "Consumer Outlook" in *Fortune*, which gives both physical and psychological data about American consumers, using the sampling technique? Mr. Roper measures how consumers *feel* about spending money in the next six months, which is an important thing for any forecaster to know.

Project 4. A few years ago, many economists claimed that banks could not create money. The war made it obvious that the banks could—and did, by the tens of billions. A truly impartial investigation of the dollar circuit, including the crucial saving-investment factor, by economists, engineers, and semanticists, seems very much in order.

Project 5. An all-out study of incentives by psychologists, anthropologists, and sociologists. What *does* make people work, and what makes them work best? (Economists should perhaps be left out of this; they have been taught too many preconceptions.) Perhaps it can be joined up with Project 1.

Project 6. Is the Sherman Antitrust Act worth enforcing, or have monopolistic competition and the 200 supercorporations observed by Berle and Means made the law obsolete? If so, how *can* we encourage free enterprise in those areas in the economy where it is genuinely helpful to all concerned?

Project 7. A thorough investigation of the possibilities of using *fiscal* devices to level off booms and slumps, without recourse to price fixing or rationing. This is the "compensatory" idea again. Many competent students, such as Alvin Hansen, believe this can be done; others doubt it. The air is full of argument, and we need an authoritative survey of the probabilities, unin-

fluenced by anybody's vested interest in theory. The TNEC was supposed to do just this, but its auspices were unavoidably political, and its conclusions are accordingly suspect in some quarters.

With these questions illuminated if not completely answered, and with the firsthand experience gained by economists in the depression and in the war, I cannot help feeling that some important new economic theory may be close at hand. Galbraith was on the edge of it with his monograph on disequilibrium—not grandiose, full-whiskered theory covering the whole economy, but limited and useful theory competently verified.

CHAPTER 20

Lessons in Peace and War

RUNNING a finger along the shelves of the storehouse we note many solid accomplishments of social scientists either not mentioned or not adequately described in the foregoing pages. In this chapter and the next we will call the roll of some of these achievements, developed in peacetime or in war. Many must still be neglected; it would take an encyclopedia to include them all.

The law of averages

Political science like economics has a good deal of theory trouble. Its experts have worked out some excellent operating techniques in recent years, as in economics; and the next step is to team up with the other disciplines—sociology, anthropology, psychology—to get a broader base for political theory and generalization.

Many of the techniques of political scientists depend on statistical prediction. Any given individual may be unpredictable, but a settled society composed of many individuals obeys the law of averages with remarkable precision. Public administration and government make extensive use of these calculable certainties. The United States Census has devoted many years to locating and measuring some of them, and newer agencies have worked out statistical averages with competence and delicacy. The Public Roads Administration, for example, can tell us within a small margin of error how many cars will go over Route 1 between New London and Bridgeport next month. The Metropolitan Life Insurance Company can tell us the chances of reaching age sixty-five.

Nowhere have I seen a more graphic view of this phenomenon than the imaginary account, published in the *New Yorker*, of what might happen if it should fail. The place is the Triborough Bridge in New York; the time is a fall evening in the late 1940's. Suddenly there occurs the heaviest concentration of outbound traffic ever known! For no discernible reason thousands of motorists simultaneously head like so many lemmings for the bridge. On they come, until the police, including all available reserves, are completely overwhelmed. The police had known almost to the last digit the number of cars that would cross Triborough Bridge during any one of the twenty-four hours. Now all the rules are shattered!

A report made by Sergeant Alfonso O'Toole who commands the Bronx approach is typical: "I kept askin' them, 'Is there night football somewhere that we don't know about? Is it the races you're goin' to?' But the funny thing was half the time they'd be askin' me, 'What's the crowd for, Mac?' "

This collapse of the law of averages nearly finished New York in the story. It would finish any established community. It gives one an eerie feeling even to imagine it. Think what would happen to the telephone company if everyone simultaneously decided to put in a call; or to the water supply if everyone should take a bath at the same moment; or to the hospitals if everyone should fall sick at one o'clock! When Oppenheimer talked of "regularities" in social science, here is one of the things he meant.

Another mathematical law affecting human societies is expressed in the bell-shaped frequency distribution curve. It applies, indeed, to all living things. Take the height of men in any large aggregation like an army. Line them up in order of height, the tallest at one end, the shortest at the other. The probability of a soldier being near the middle of the scale is great, and the probability of his being near either end of the scale is very small. If we plot the number of soldiers at the various points on the scale we get a great concentration at the middle, and the familiar curve shaped like the Liberty Bell. Almost all biological traits when measured and plotted in large numbers exhibit the same graceful curve. This helps experts make predictions about schools, hospitals, markets, where future needs must be anticipated.

The great society

Mass production and the machine more than anything else are responsible for the rapid and often painful growth of formal government in recent years. They have increased the division of labor to the point where it has destroyed the old self-sufficiency of the family and the small community. Acute problems arise of mass unemployment, destitution in old age, child labor, strikes, breakdowns in transportation, housing and slums, public education, soil erosion, crime, sewage disposal—problems which individuals cannot cope with. Yet they must be solved if society is to go on. So big government comes in, on federal, state, and city levels, especially the first and the last.

Frederick Jackson Turner produced a famous hypothesis in 1893 called "The Significance of the Frontier in American History." Many of our culture habits, he said, can only be explained by the frontier. In the United States with its tradition of individualism and the free moving frontier, existing forms of government up to 1900 tended to be loose and flexible. They were inadequate to exercise the new functions demanded of them in the twentieth century, especially after the great depression of the thirties. Political scientists have been trying to design improvements to keep pace with the march of the machine. But they still have a long way to go before government structure is competent to handle the demands put upon it. The old forms, the checks and balances, come down from an age when even railroads and factories were unknown. No wonder they are subjected to tremendous strain.

The Social Science Research Council has had committees studying the situation. The universities have established courses in public administration, have set up specialized graduate schools like the Littauer at Harvard, and even whole departments to work on administrative techniques as in the University of California. In administering the affairs of a big city, modern methods include the city manager plan, uniform accounting, city planning, public housing and slum clearance, parks and playgrounds, great recreational centers like Jones Beach near New York. Outstanding technicians have come to the fore, such as Clarence Dykstra,

Joseph McGoldrick, Robert Moses, Luther Gulick, Louis Brownlow.

But rapidly as techniques expand, aided by such excellent organizations as the Public Administration Clearing House, the cities accumulate their problems even faster. The outlook for traffic control was never darker than in 1948. Within a year or two, the way traffic jams are now accumulating, all New York may be like the Triborough Bridge in the story.

On the federal level we are beginning to get fresh ideas and theory from men like Thomas Finletter, Paul Appleby, David Lilienthal, ex-Senator Robert M. LaFollette, who have seen government from the inside, and then generalized from first-hand experience. The President's Committee on Administrative Management, headed by Charles E. Merriam, produced some original thinking on the vast change in the office of the American presidency in recent years. Because of the special interests and pressure groups which entangle Congress, the committee said, only the president can now represent the whole people.

The TVA should be mentioned again at this point as an important new development in political science. Its regional position between federal and local government gives it certain advantages. It starts comparatively free of red tape and political legacies. Its boundaries correspond with geographic realities far more than in older arbitrary units such as the states. Young men come from all over the world to study this new agency, and to admire the towering dams, and the orderly, gleaming instrument panels —controlling power, navigation, flood waters, recreation areas, as one controls a great organ.

Both the natural and social sciences are integrated in the TVA —physics, chemistry, atomic energy installations, biology, engineering, public administration, labor relations, economics, sociology, cooperative societies, soil conservation, the hydrologic cycle, social anthropology, medicine, public health. . . . The TVA may be in the process of working out a basic formula for coming to terms with the machine, a formula whereby plain citizens, businessmen, labor men, government men, professional men, all cooperate for their mutual welfare; whereby decentralization is carried to the limit consistent with the electric power grid and the technological imperative.

The cultural lag again

We can chronicle progress in the field of public administration, but political science is mostly social science$_2$ so far as underlying theory is concerned. Could anyone today put such terms as "fascism," "nazism," "communism," "capitalism," "mixed economy," "political democracy" in a theoretical framework on which competent observers could agree? These terms and others like them are hurled around from party to party, and from continent to continent, meaning very different things to different men. The Kremlin, for instance, now claims in 1948 an original and exclusive patent on the term "democracy"!

One obstacle to applying political science is the cultural lag. Big government is now essential because of the interdependence of modern technology, but government is "bad" in the belief systems of many sturdy citizens in the upper income brackets. (The lower brackets do not hold these beliefs so strongly. A recent poll shows that 41 percent of Americans would prefer to work for the government, as against 40 percent who prefer private employment.) Well-to-do citizens have great power in the community. Believing, as many of them sincerely do, that government is inherently inefficient and incompetent, they are in a position to halt or cripple objective scientific studies of our political machinery. One remembers the fate of the National Resources Planning Board.

The great depression and the war economy have helped to reduce cultural lag in economic institutions. Political science may be on the verge of great developments as a result. Certainly most of the old patterns, classifications, and hypotheses are in urgent need of revision. John M. Gaus has outlined for the Social Science Research Council a research program along this line. Here are some of the questions to be answered:

What is a realistic foreign policy for the United States in the atomic age?

What are workable relationships between federal, regional (like the TVA), state, and local governments?

What are the proper relationships between executive, legislative, and judicial power today?

What are the proper line, staff, and auxiliary relationships in government?

What is happening to the US presidency? It seems to be moving rapidly toward some quite new status.

What does the average citizen think of his government today? What does he want from it?

Some War Lessons

We have already described certain wartime improvements in social science technique and theory, and here we will continue the catalogue, with special emphasis on applications for peacetime.

Landing on Leyte

When General MacArthur left Corregidor he said: "I shall return," and he meant it. But quite a few people helped him, among them a team of scientists who paved the way for the invasion of Leyte.

The team had to start almost from scratch. It lacked even a good map of the island. But gradually the members worked out a method which became standard for finding out about islands under Japanese control. First, they gathered all available literature dealing with the Philippines, from the Library of Congress down, and when necessary had it translated. They got in touch with some 400 Filipinos on the West Coast, waiting to return home—mostly English-speaking businessmen, some of whom had maps, photographs, and memories of shore lines. They advertised for photographs of Philippine scenes and got millions of pictures from all over the US. This required expert photographic interpreters to piece the information into a structural whole. And so it went. New data, often from the strangest sources, was constantly used to fill in unknown areas. Before the landing on Leyte was made, an astonishingly lifelike picture had been constructed.

The first question which crossed my mind as I listened to these exploits was: Where does the *science* come in? Would not any intelligent businessman or newspaper man or even a lowly author, given the same assignment, do the same thing? The answer is "yes and no." Much of the work was straight common sense but

by no means all of it. Experts and specialists were needed to reconstruct topography, to analyze economic data, to interpret photographs. Above all, anthropologists were needed to understand the local culture patterns of the islanders.

Natural scientists on the team contributed expert knowledge about ocean currents, snakes, meteorology, tropical diseases, geological formations. After thinking it over carefully, I concluded that if only smart newspapermen, and shall we say authors, had had the matter in charge, perhaps General MacArthur would still be maneuvering off the beaches.

Later on the team made use of interrogation reports from prisoners of war, captured diaries of Japanese officers and men, captured letters and official documents. Also reports were received from neutral observers in Japan proper; Japanese newspapers and magazines were carefully read, and broadcasts monitored.

Alexander Leighton tells us that team members needed first of all a conceptual frame of reference into which the information could fit. This they constructed from the universals of the culture concept, which governed Japanese as well as other people, and from the principles of psychiatry. Next they needed a flow of continuous reports from all over, like the Weather Bureau. As these came in they "reconstructed their picture like a paleontologist building up a dinosaur from a tooth!"

The attitude of the official brass was that the Japs were nonhuman, hence their morale was indestructible. The only way to deal with them was to kill them. To take prisoners was useless, as they would either lie, or die before they told the truth. But the scientists insisted that the Japanese were human beings. While their fixation on the Emperor made them pretty tough (almost as tough as our marines), they got tired too, like anyone else, and discouraged and beset with rumors, apprehensions, and fears. At some point they would *break*—just like anyone else.

One social scientist offered to bet that he could mop up half a captured island using loud-speakers and leaflets, with fewer American casualties than the Army would suffer on the other half of the island using flame throwers and hand grenades. He was not taken up.

A very important point comes to light in this discussion with applications far beyond island hopping in the Pacific. Whenever

you hear the phrase, "Force is the only thing Japs (or Russians, or Nazis or labor leaders) understand," be on your guard! No human group reacts in such an exclusive fashion. What the phrase really indicates is that the speaker has reached the end of his understanding and is in a state of acute frustration. He is taking refuge in an empty stereotype. The next stage in his frustration will be to join the shoot-'em-down school.

These area studies and remote control techniques are ready and available for finding out about any place on earth without actually going there. Iron curtains and locked frontiers cannot keep out this kind of periscope. Leighton is sure that in peacetime they could be used to reduce hostility between peoples of different cultures by giving true pictures instead of distorted and emotional ones. We shall have more to say about this later.

Administering the Pacific Islands

George P. Murdock, the anthropologist who set up the Cross-Cultural Index at Yale, was active on social science teams in the Pacific. With the index as a base, and also with the help of some Japanese-Americans, he prepared six guides for the Navy in its island-hopping across the Marshalls, the Marianas, and the Carolines. He and his staff prepared a 600-page report on Okinawa in three months. Admiral Nimitz had it ten days before the deadline, and some of Murdock's men landed on the beaches of Okinawa with the first wave of marines. There were half a million natives on the island, and this advance counsel on how to respect their culture and do business with them saved many costly mistakes and many lives. Later on, Murdock acted as civilian administrator of Okinawa.

Now the United States has become "trustee" for a good part of the Pacific Ocean, with the Navy in immediate command of the islands. This means, one hopes, that native cultures will be respected. Murdock, in cooperation with the Navy, the Viking Fund, and various colleges, has recently acted as the coordinator of the largest project in the history of anthropology, its purpose to help Uncle Sam do a good job as trustee. Twenty-two institutions sent experts to the Micronesian Islands for a year's study of the peoples and their cultures. Each organization took a dif-

erent island. The biggest task, on Truk, was assigned to Murdock's team from Yale.

Applying anthropology in this way is not altogether new. Long before the war John Collier of the Indian Service was using as consultants such distinguished anthropologists as Clyde Kluckhohn and Scudder Makeel. It was as an anthropologist in the Indian Service that Oliver La Farge got his material for "Laughing Boy," that haunting novel of Navaho life.

The strategic bombing surveys

How were high priority targets for bombing in Germany selected? Early in the war, according to John W. Gardner writing in the *Yale Review*, it was found that regular military strategists could not do their job effectively without the aid of social scientists who knew the area and knew how to sift material—economic, political, technical. In 1942 Germany's food shortages were considered so critical as to suggest an early collapse. This was dangerous wishful thinking, based on a false analogy with 1918. The scientists countered with the flat prediction that not only was the food situation good in the Reich, but rations would soon be raised. Sure enough in October, 1942, Germany did increase her food rations!

A team of social scientists and Army officers, one thousand strong, went into Germany right behind the advancing front in 1945 to determine what had actually happened to people and to industry as a result of the 2,700,000 tons of bombs the Allied air forces had dropped. Four of the staff were killed and a number wounded during this survey. Their report has been issued by the government.

Radio commentators in America had given us a picture of a Germany as ruined as a Maya jungle city, and a people dazed and undone. The report shows how far the radio, the newspapers, and even official communiqués departed from the facts. Data were gathered by firsthand examination of bombed cities and industrial plants; from German statistical records that had been preserved not only in files, but in coffins, henhouses, barns and caves; by interviewing people of all classes who had—or had not—been bombed.

About 25 million Germans were in the bombed areas, of whom

more than 300,000 civilians were killed, and nearly 800,000 wounded. One-fifth of all dwelling units in the Reich were destroyed or seriously damaged. Despite this holocaust, our air raids failed to destroy German morale, and did not seriously disturb production. The surveyors found, considerably to their astonishment, that the rate of munitions output trebled after Pearl Harbor, and that oil was the only serious shortage up to the very end.

Air attacks lowered morale and production, but broke neither—contrary to most news stories. The report also brings out the following curious and interesting facts:

> German authorities were much more concerned about losing strategic plants than about losing whole sections of cities.
>
> Bombing depressed and frightened war workers but they went right on working.
>
> Whatever the target system employed, no indispensable industry was permanently put out of commission by a single attack. "The recuperative and defensive powers of Germany were immense. . . ."
>
> Morale was higher among people who had thought little about war than among those who were mentally prepared. Expectation does not cushion this type of shock; it magnifies it.
>
> Members of the Nazi party were just as scared as other Germans, but after the raids their morale recovered faster.
>
> Destruction of school buildings was especially bad for morale even when there were no casualties. Parents were afraid their children would be sent to special Nazi camps and there indoctrinated.
>
> Nazi propaganda directed against Allied bombing was not effective. More and more Germans came to distrust the official handouts.
>
> Increase in police terror methods apparently tended to increase opposition, both organized and unorganized. Jokes against the authorities, rumors, black-radio listening became more frequent.
>
> The Germans—as well as the British—learned the hard

way something of which any anthropologist might have warned them in advance, namely, that to evacuate people to a different culture pattern may be more disastrous than bombs. Do not move city folks to farms; move them to a safer part of the city.

Another report was published later by the Strategic Bombing Survey on Japan. I will spare you the minute and ghastly details of what happened in Hiroshima and Nagasaki in concentric rings out from "point zero" where the atomic explosion occurred. Leighton remarks that the report confirmed what his group had found out about Japanese morale by remote control, namely that Japan was ready to surrender before the atomic bombs were dropped.

These surveys, for all their grim content, have produced new knowledge about human behavior. They are a kind of super-Middletown where trained scientists watch, not a single town, but a whole nation behaving under tension. They indicate that propaganda has definite limits and that police methods breed resistance. The data and techniques can be very useful in area surveys in peacetime.

CHAPTER 21

Learning Things

IN THIS chapter we shall continue calling the roll of recent work in human relations which seems interesting and significant. We will investigate learning theory at Yale, a fresh approach to problems of crime and punishment, and Dr. Kinsey's analysis of the sexual behavior of the American male.

Learning theory

Tied to the culture concept is a principle governing one's "personality:" we are what we are because of the habits, customs, language we have learned since birth. How did we learn our habits? The anthropologists toss this fundamental challenge to the psychologists. Many researchers have accepted the challenge, among them C. L. Hull, John Dollard and N. E. Miller of the Institute of Human Relations at Yale. For some years they have been seeking an answer by experiment. They have not found it all, but they have some of it.

When I went to visit them in New Haven, the first exhibit they showed me was a small, brown-eyed monkey. He crouched in the back of an experimental cage about three feet square, while the man with the notebook turned the page to trial number 873. The man touched a switch and a bell rang sharply. In one sweeping movement the monkey leapt to the front of the cage, thrust a paw through the bars, and pulled the lever of a small box with a light in it. As he did so the bell stopped ringing and the light went out.

He looked up at us with his sad eyes, relieved that the noise had ceased but still worried. He stretched a long finger through

the bars again as though to say: "I hope the damn thing is really off." Then he turned around, leapt to the back of his cage, and crouched there again to wait for trial number 874.

The bottom of the cage was made of metal strips capable of giving a mild electric shock. After repeated trials with the shock, the monkey had learned to pull the lever to stop the current. Then the shock had been associated first with the light in the box, next with the bell, on the best Pavlov principles. Now without getting an electric shock at all, only an emotional one, he pulled the lever to stop the bell.

We went upstairs to see a documentary movie about two white rats and how they learned things—a film that compared favorably with Walt Disney's finest efforts. One rat was very hungry and the other was replete. They were placed in identical cages side by side. The camera would concentrate first on one cage, then on the other. An ingenious mechanism deposited a pellet of food in a dish whenever a metal bar, shaped like a stirrup, was depressed—the slot machine idea.

The hungry rat with quick, eager movements explored his cage for possible food. About the fifth time around, he hit the bar by accident and down came a pellet. He gobbled it but made no connection between cause and effect. Round and round he went with now and again another accidental reward. At first he presses the bar awkwardly, head first through the stirrup. Gradually he comes to perform more swiftly and surely, until in the end he does it as nonchalantly as Groucho Marx reaching for a cigar.

Meanwhile, the satiated rat in the next cage continues to digest ruminatively in a corner taking no interest whatever in his slot machine. Unfortunately for him, however, his cage is equipped with a shockable bottom like the mournful monkey's. A shock is applied and the rat, for all his satiation, jumps to the top of his cage. Then ensues a ballet beyond anything Disney ever composed in the course of which he accidentally hits the bar and shuts off the current.

More shocks are given resulting in more wild dances, more accidental collisions. Presently the rat *learns* to associate depressing the lever with a reward—not food, but relief from annoying sensations in the soles of his feet. Furthermore—and this is im-

portant—he learns *much more rapidly* than brother rat learned about food. The pain drive is more powerful than the hunger drive—at least for these white rats in these intensities.

What lessons have we here? Dollard and Miller have written a book called *Social Learning and Imitation* to explain the fundamentals of their theory. The process of learning anything for the higher mammals, including man, normally takes place in four steps:

1. A drive—such as hunger or pain, which makes the individual ready for action.
2. A cue—such as the metal bar.
3. A response—such as pulling the bar.
4. A reward—such as food, or relief from electric shock.

Did you ever teach a cat to sit up and beg? The four events are very clear in this act of learning. The drive is hunger. The cue is a piece of meat held between thumb and forefinger. The first response is an eager reaching, but the reward only comes when she sits on her haunches, paws hanging down. On returning from New Haven I taught our new kitten to do this in twenty minutes flat—but I will admit that she is smarter than most. She now sits up politely for anything she wants—dinner, a drink of water, to go out of doors, to have somebody play with her.

"After learning has been completed, response and cue are bound together in such a way that the appearance of the cue evokes the response. . . . The conditions under which human learning takes place . . . are primarily social and cultural. . . ." If the reward is not forthcoming, the response gradually suffers extinction. The reward, as we have seen, can be either positive or negative—pleasure, or relief from pain. When human reasoning and foresight are interpreted in these same four steps, the theory can be widened to include most forms of human behavior.

The theory is derived from Pavlov, Thorndike, Watson, and Hull. Edward C. Tolman of the University of California also has had a hand in it. On simple levels it has been verified not only by the performance of monkeys and rats, but by experiments with children, older students, and soldiers. At these levels the theory works and is proper material for the storehouse of knowledge.

Behavior in such controlled situations can be predicted, even quantitatively predicted—for instance, the number of trials needed to teach a subject a simple lesson, like a set of nonsense syllables. At higher levels in complicated human situations, the authors of the theory realize that much research remains to be done. Miller and Dollard like good scientists are willing to take the hard, gruelling path to knowledge, the path of measurement and counting and endless repetition of experiment—the same path the physicists took for so many decades before the sky suddenly opened.

Meanwhile, tested parts of the theory can be usefully applied in innumerable ways: for instance, to simplify and improve teaching in school; to help interpret and explain the habits of an individual or even a culture; to win friends and influence people for business, advertising, social, or political reasons. The political implications are especially dynamic. If any kind of behavior can be learned by anybody, it follows logically that changes in individual or social behavior can be deliberately engineered.

This logical conclusion, however, jumps lightly over various scientific difficulties, as well as the major obstacle of lack of power to apply the findings. Some of the scientific difficulties can be solved by further research, while others may call for searching criticism and perhaps a change in direction. Says Mark A. May, in his foreword to the book: "Like every scientific hypothesis this one is viewed as a beginning rather than as a terminus to effort in the field. The theory of imitation is an idea to be elaborated on, tested, and perhaps radically changed by further work."

Already critics have complained that the parallels between animal and human learning have been pressed too far; that far more detailed knowledge is needed about the operation of both primary and secondary drives; and that in the age-old argument about nature versus nurture this theory, like others of the behaviorist persuasion, tends to overemphasize nurture.

Help for mothers

Nature is given more credit by another group, also at Yale, in Arnold Gesell's Clinic of Child Development. The members of the clinic observe infants and young children in nursery groups from birth onward, and publish their findings in large books with

many photographs which are eagerly bought by matrons on lower upper and upper upper levels. These books have probably saved millions of woman-hours of worry. Indeed, no well-to-do young mother today is prepared to deal with Junior until she has consulted her copy of Gesell. There she may learn, for example, that Junior's habit of kicking his little sister is quite normal for boys in his age group and will presently and happily be outgrown.

Never have youngsters been so intensively observed and photographed or their habits chronologically classified in such detail. Dr. Gesell writes:

> The newborn baby . . . is at birth already in possession of all the nerve cells he will ever have. These cells have much capacity for learning; but to no small extent their organization has been either fixed or channelized by the countless generations. . . . His nervous system is the carrier of an immense series of evolutionary adaptations. . . .
>
> He has constitutional traits . . . both racial and familial. . . . The child comes into this double inheritance through an innate process of growth which we call *maturation*. He comes into the social "heritage" of culture through a process of *acculturation*. These two processes interact . . . but . . . acculturation can never transcend maturation.

He thus not only places more importance on structure and on the genes than do Miller and Dollard, but he is also more devoted to observation than to theory and measurement. One suspects that both approaches are necessary for an understanding of how a raw bit of humanity learns to become a disciplined member of society.

Heredity plus environment

Probably no scientist today would admit a bias in favor of either heredity or environment since the importance of both has been so clearly demonstrated. Yet the perennial argument continues in a different form and psychologists are prone to give more weight to one factor or the other. Perhaps as clear a statement as any of how the two forces interact appears in a stimulating new book by Norman Cameron of the University of Wisconsin, *The Psychology of Behavior Disorders: A Biosocial Interpretation*. Dr. Cameron is one of the few specialists in both psychology and psychiatry. While his book is primarily about psychiatric cases it is founded on a broad theory of individual development.

Personality, he believes, is developed by the inseparable interweaving of physiology with training. At birth the infant at once develops needs. Society is organized to help him meet them: indeed, every culture is built to an unrealized extent around the biological needs for food, shelter, mating, and parenthood. The infant's needs are satisfied in a social situation; he cannot eat alone or keep himself warm or clean; so the satisfaction he feels, as well as his frustration when tensions are prolonged, is connected at every stage with an older person on whom he depends. Thus physical and emotional habits grow together, and one's personality results from the "dynamic organization of interlocking behavior systems that each of us develops through learning processes, as he grows from a biological newborn to a biosocial adult in an environment of other individuals and cultural products. . . . It is always this interplay of biology and society."

Thus Cameron would fit the results of learning experiments into a rounded picture of human development. Perhaps the Yale behaviorists would say that his hypothesis fits into *their* theory, as a more detailed explanation of how primary drives come to be replaced by secondary drives.

Crime and punishment

In Chapter 4 we described the Healy-Bronner studies which proved that juvenile delinquency was due primarily to emotional maladjustment in early childhood. This conclusion disproved two cherished hypotheses: first, that delinquency was due to "bad character," presumably inborn; and second, that it was due entirely to poverty. Social scientists are beginning to close in on the whole field of crime. The culture concept and new knowledge about conditioning in childhood are casting many doubts on traditional ideas about the efficacy of punishment.

These ideas go back a long way. In the seventeeth century people were sure that the severer the punishment the greater the prevention. They had no conception of the possibility of reforming offenders or of preventing crime by changing an evil environment. A terrible fate was meted out to criminals, inflicted often in public so that others might beware. Convicted persons were hanged, drawn and quartered, broken on the wheel. Their ears were cut off. They were blinded with red-hot pokers, branded,

crippled for life. In England as late as 1820 one could go to the gallows for stealing a pewter pot.

Some progress has been made since those dreadful days, for even Hitler did not torture in public. Most of us now know that family care and social environment have something to do with delinquency and crime. We support "reform" schools, juvenile courts, the parole system. Some states have gone so far as to abolish the death penalty.

When a luckless pickpocket was given a big public hanging on Tyburn Hill other luckier pickpockets were busy among the gaping crowd. Punishment, while it may deter some criminals, fails in more cases than ever go to trial. Meanwhile the criminal law is still loath to analyze more closely by examining a man's past—or his glands. "It imprisons or sets free regardless of what a man is, looking only to the legal character of what he did," says John Barker Waite of the Michigan Law School. Here is Eddie Murphy of Detroit, proudly exhibiting the gold medal he received for being the first criminal in America to be convicted one hundred times! Frank Evans is right behind him with seventy-six convictions; Kate Russell with fifty. Records of the FBI show 76,626 persons who had been punished 231,015 times—or about three cures per head.

Professor Waite believes that the failure of punishment to deter criminals has the same psychological base as the courage of soldiers in combat; neither the soldier nor the thief expects his number to come up. Effective prevention of crime requires something other than punishment, not something in addition; not bigger and better sentences, *but an outright substitute.* Punishment and prevention cannot coexist. Waite's proposed substitute is based on four principles:

1. That some offenders shall not be imprisoned at all. Children, for instance.

2. That other offenders shall never be allowed their freedom if they are found by competent medical authority too sick to be at large in society.

3. That all offenders shall be analyzed by social scientists and medical men to find the causes of their behavior, and wherever possible shall be cured of their complaint. For instance, sex offenders—

like one recently examined, who was found to be suffering from chronic inflammation of the urethra.

4. That offenders who have been given their freedom shall be not merely watched but actively assisted. For instance, a boy who stole candy was released and stole candy again. He was found to be short of sugar in his blood stream. When this condition was remedied he stopped stealing.

Speaking as a lawyer and a social scientist Waite concludes: "Crime must no longer be defined as an act which is punishable but as something which demonstrates the criminal as socially dangerous." Dangerous in the sense of a man with typhus. The principle of an eye for an eye and a tooth for a tooth is going down before our growing knowledge of human nature.

Dr. Kinsey on the American male

All cultures have elaborate taboos about sex, some less frustrating than others but none based on scientific knowledge. The taboos of Western civilization, especially since the Reformation, have been productive of tensions and emotional explosions. No subject is more discussed, politely or sub rosa, and none has remained in greater obscurity—a happy hunting ground for quacks, charlatans, low comedians, and mental cripples. As Dr. Alan Gregg of the Rockefeller Foundation puts it: "The current confusion of ignorance and sophistication, denial and indulgence, suppression and stimulation, punishment and exploitation, secrecy and display . . . leads neither to intellectual honesty nor human decency."

Alfred C. Kinsey of Indiana University is a zoologist, his specialty wasps. He has a gift for inspiring confidence and his students used to bring their troubles to him. As might be expected with young people, their troubles often had to do with sex. Dr. Kinsey was appalled to find how little there was to tell them beyond the usual homilies salted with common sense. The scientific storehouse he discovered was almost bare—no research to amount to anything, no verified theory, a few hypotheses by Freud and the psychoanalysts.

Youngsters troubled about their careers could take aptitude tests, but what could they take for sex worries? Practically nothing. So Kinsey left his wasps and abandoned natural science for social science. He decided to accumulate some really depend-

able data on human sex behavior and to use the same skeptical, objective approach he applied in zoology. He set his goal at 100,000 case histories, male and female, of all ages. That was nine years ago.

Those with an ear to the ground have been hearing about this fabulous undertaking for a long time. Indiana University and the Rockefeller Foundation have been behind it. Robert M. Yerkes, who made the famous studies of chimpanzees, has endorsed it, as well as Lowell Reed of Johns Hopkins, R. L. Dickinson of the New York Academy of Medicine, and many other distinguished scientists and physicians.

When 5,300 case histories of American males had been collected and tabulated, Kinsey decided to publish his first volume, with six or seven more to come. It has proved to be a publishing event of startling proportions. Although the book runs to 800 pages packed with tables and charts, more than 200,000 copies were sold within three months of publication. The public was polled by Gallup and apparently it approved. The early reviews were slightly punch-drunk, but mostly favorable. It is harder, of course, to attack a book loaded with facts than one loaded with unverified theory.

The study illustrates the man-with-the-notebook idea in social science to perfection. That is all Kinsey and his assistants have—400 questions, an unbreakable code system, and a notebook. Later on the tabulating machines take over.

Two scientific questions immediately present themselves: Has he taken an adequate sample of the "universe" of American males? Assuming that he has, does the interview technique really drag these deeply buried, embarrassing facts out of the man or boy being interviewed? The scientists I have consulted—including a number who were themselves interviewed—say that Kinsey is perfect in neither department. His sample is probably a little biased, his interview reports a little skewed toward the conservative side. But he is competent, painstaking, scientifically skeptical, and he has been perfecting his techniques for almost a decade. We may, therefore, accept the results, these experts say, as having a high degree of probability. The results check with earlier information from psychiatrists and others about sexual outlets, but indicate that frowned-upon practices are more widespread than most of

us had imagined, and that the drive starts earlier and lasts later than we had supposed. There also seem to be some curious differences in sex customs between the upper and the lower brackets; the latter being the more conventionally "moral."

One point that stands out is the factor of torment; the time and energy that so many human males spend trying to appease the sexual urge. Have we here another penalty of a high energy society? In primitive cultures the urge needs to be strong to surmount the violent physical exertion of existence in a small nomadic band. Perhaps medical research should seek harmless ways of sublimating this vital drive in modern man.

But this is speculation and Kinsey indulges in nothing so unscientific. He gives the quantitative statistics, how many American males indulge in what sexual outlets, at what ages by grades and classes. Why they do it, or how they can modify it, he does not say. The theory may come in later volumes; or perhaps theory will be reserved for the men who stand on his shoulders. Dr. Kinsey has broad shoulders. Already he has immortalized himself by documenting a whole new department in the science of man. He has not said the last word about sex but he has produced the first real data.

PART III

Implications and Conclusions

Today we are faced with the preeminent fact that if civilization is to survive, we must cultivate the science of human relationships—the ability of all peoples, of all kinds, to live together and work together, in the same world, at peace.

—FRANKLIN D. ROOSEVELT

CHAPTER 22

Repairing Communication Lines

WE HAVE come to the end of sampling the social science field, and from here on will deal with various implications and conclusions. We can also be somewhat more speculative and philosophical in this final section.

One of the great problems facing people today, on all levels, is communication. Clearly the "cold war" between the United States and Russia is in no small part due to communication failure; the two nations cannot talk to one another. In the summer of 1947 John Steinbeck went to Moscow and wrote a series of articles about what he saw. He closes with these words:

> Well, there it is. We found . . . that Russian people are people and, as with other people, that they are very nice. The ones we met had a hatred of war, they wanted the same things all people want: good lives, increased comfort, security and peace. . . . Some bad ones there are surely but by far the greater number are very good.

The physicist Richard C. Tolman of the United Nations Atomic Energy Commission once assured me that in his opinion the Russians would have accepted the Lilienthal-Acheson plan for the international control of atomic energy if they had been confident that it was made in good faith. The plan was so generous that the Kremlin was sure it must conceal a joker. This is as tragic an example of communication failure as we can find anywhere.

It is not the only example. One reason for the troubles in Palestine, in India, in the Far East, is that people do not understand each other, and lack techniques for arriving at agreement

with each other. Strikes and labor management difficulties are often the result of communication failure. So are many factional rows inside a country, squabbles within organizations, deadlocks in committee meetings, personal fights, and even the schizophrenia of a single tortured mind. On every level we find communication lines blocked, and often severed completely. Elton Mayo in *Social Problems of an Industrial Civilization* emphasizes the enormous importance of the problem:

> I believe that social study should begin with careful observation of what may be described as communication; that is, the capacity of an individual to communicate his feelings and ideas to another, the capacity of groups to communicate effectively and intimately to each other. This problem is beyond all reasonable doubt the outstanding defect that civilization is facing today. . . . Our international troubles are unquestionably due to the fact that effective communication between different national groups was not accomplished. . . . On the contrary, an effort was often made to "find a formula," a logical statement which should conceal the fact that neither side had any insight into the actual situation of the other. . . .

As Mayo develops it, communication is like the circulation of the blood—the free flow of ideas through structured channels *within* groups of all sizes, and *between* groups, up to the great national and international units. Communication depends at the lowest cycle on the articulateness of individuals; next on the organic functioning of small groups where individuals express their needs and desires and where the expressions are passed upward to the next larger cycle, and so on. Such free communication, facilitated by mechanical aids and mass media—the radio, press, the movies, and so on—could respond sensitively to a demand or appeal from the grass roots, the little people who don't want war. It could—but so far it does not. The mass media are mostly otherwise engaged and the little people inarticulate.

An anthropologist on communication

Education, science, human progress of every degree, all depend on expressing an idea clearly and being understood by one's group. Society is cemented together by communication. As Edward Sapir puts it:

While we often speak of society as if it were a static structure . . . it is a highly intricate network of partial or complete understandings between the members of organizational units of every degree of size and complexity, ranging from a pair of lovers to a league of nations, or that ever-increasing portion of humanity which can be reached by the press. . . .

"A network of partial or complete understandings." This is as good a definition of communication as we are likely to find, as well as a dynamic definition of society itself. It suggests that *relations* between people are the important thing, not in static configurations, but in patterns that are active and changing. Sapir goes on to point out three main techniques in human communication: (1) Language; (2) symbols in special technical situations—such as wigwagging at sea, bugle calls, smoke signals, and other simple wordless devices; and (3) inventions favorable to communication, such as the telegraph, telephone, radio, airplane, and other contrivances of the communication and transport industries.

Through these three techniques a given culture is spread. It is due to mechanical invention that the culture called Western civilization has overrun a large part of the globe. But its very speed has produced serious difficulties at every stage from the individual to coalitions of governments. In an individual blocked communication may be a chief cause of mental breakdown. In a group it may cause conflicts of any degree of violence.

Nine Approaches to Communication Study

Let us glance briefly at nine types of communication studies by social scientists. Some are much further along than others, though there is something to be learned from each. The findings have never been assembled as a whole for use by social engineers. If this were done they would present, I think, an impressive body of knowledge—even with no more research. The nine approaches are:

1. The individual. Communication failure as a problem in psychiatry.
2. Group dynamics. Communication in face-to-face groups.
3. Communication in labor-management relations.

4. Advertising as communication.
5. Propaganda analysis.
6. Rumor analysis.
7. The polls as aids to communication.
8. Mass media as amplifiers.
9. Semantics.

The psychiatric approach to communication

Twenty percent of the beds in mental hospitals in America are occupied by schizophrenics. An outstanding symptom is the tendency to confuse words with concrete things. There is a disturbing similarity, says Wendell Johnson in his book *People in Quandaries,* between such symptoms and the behavior of people outside of hospitals. He quotes a twenty-seven-year-old patient who had developed schizophrenia while attending law school—a likely point of infection. According to the hospital records the young man had been a "good average" student. What follows is a section from his own account of his life written at the doctors' suggestion:

> Take the word *life* for instance, and take the word *law,* both start out with letters, l, and of conventional numbers and size with the consequential effect of many other classifications which benumb the mind such as medicinal ether is also able to. I having paused for reflection cannot image the security which such momentum holds.

The poor fellow obviously makes no distinction whatever between concrete things and abstract ideas. Communication with others is very difficult, and his machinery of thought has almost ceased to function.

Psychiatrists and psychoanalysts are developing new methods for treating such cases by helping the patient finally communicate his troubles to others and relieve the burden on himself. This technique has proved especially helpful in curing nervous breakdowns in war veterans.

Group dynamics

Every small group is held together by lines of communication between its individual members. Other lines run outward to other groups. Kurt Lewin was doing brilliant work on group structures

up to the time of his death and found, significantly enough, that the better the communication channels the more democratic the group.

The Research Center for Group Dynamics is carrying on where Lewin left off.[1] Here, for instance, is a government postwar housing project for 100 families being studied by the center. The attractive white buildings are situated in the middle of a long established community of low income families. The new people moving in do not expect to like their poorer neighbors. The latter feel that they are being highhatted—as in fact they are. Communication lines registered either no contact at all or outright hostility —a perfect foundation for friction, tension, and bad blood.

The scientists of the research center tried deliberately to mend the broken lines by starting joint activities for the two groups. First a nursery school was established for babies of both groups. Then teen-age dances were arranged in the community house. A neighborhood newspaper was started, a softball team for men and afternoon recreation for various ages—all with joint participation.

How well is the plan working? The final report is not yet published, but preliminary results are encouraging. The center is hoping for significant findings about group dynamics. "Because communication is a basic aspect of the social process the knowledge gained on this project should have useful applications in all types of groups, from industry, or the neighborhood, to such large units as the community, the nation . . ."

Labor-management communication lines

In the newer studies of labor-management relations, the reader will recall the great emphasis laid on two-way communication— from workers up to management, via grievance machinery, joint committees, interviewing techniques, suggestion boxes; and from management down to the rank and file, via the same joint committees, get-together meetings, clearer and more interesting bulletins, reports and financial statements covering company performance. One of the most important techniques of all is to let the workers know *in advance* about changes which will affect them.

The elaborate organization charts drawn by efficiency engineers

[1] First at MIT, now at the University of Michigan.

used to look nice on the wall but they bore little reference to human psychology and behavior. Today organization is more and more deliberately designed to connect management with the rank and file through the natural leaders, the spokesmen or communicators, of the informal groups.

The advertising approach

The techniques of communication are constantly being studied by advertising and publicity agencies. Millions have been expended for research but unfortunately much of it is aimed at bamboozling the wayfaring consumer and making her even more confused than she already is. Out of this expensive activity, however, some sound techniques and generalizations have undoubtedly emerged; otherwise no businessman in his senses would appropriate a cent for advertising.

The up and coming methods which make a man rush for a Lee hat conceivably might make him rush to the support of the National Science Foundation, or UNESCO. Certainly they proved effective in selling war bonds, in holding down black markets, in stimulating production, and foiling spies during the war. Similar techniques have also proved useful in campaigns for community chests, public health and safety measures, better diets, and many other noncommercial campaigns in the public interest.

No group of social scientists to my knowledge has ever carefully dredged out the assumptions, theories, and principles upon which advertising appeals are based. Leonard Doob has made perhaps the best beginning in his scholarly analysis of propaganda. James Rorty in *Our Master's Voice* made a penetrating and witty analysis, but it was, shall we say, an inside job. Rorty had once labored in the cubicles himself. A rewarding study awaits a team of scientists under the general style: "What have the advertisers found out about man?"

Propaganda analysis

The rise of Mussolini and Hitler encouraged a good deal of objective study in the 1930's of the methods employed by these resplendent charlatans. Clyde Miller of Columbia was especially active in such analysis. What strings did they pull, what pipes did they play, to stir the mass of the people so profoundly? For a

time it looked indeed as if Hitler had discovered the secret of how to change a culture overnight—something no anthropologist in his right mind would admit possible. But in the end it was only too clear that whatever Hitler found, it was not good enough.

Some day a group of scientists will explain for us the extraordinary rise and fall of Hitler. He seems to have used both intuition and science. He was constantly consulting astrologers, yet he drew heavily on German physical science and also on social science to an unknown degree. His psychologists worked on vocational aptitudes in selecting fliers and tank crews, and on team organization in party cells and small army units—and who knows what else? I wish I had this material to draw on at this very moment.

I have been watching propaganda campaigns for many years, Hitler's is not the only one which has blown up in the maker's face. They look most impressive for a few months, or years, and then the people begin to see through them. Look at Father Coughlin; look at the stale old stereotypes of the Communist dogma, which have not changed a comma since 1909. Why do these campaigns start so well and then backfire? Here is another chance for a fundamental piece of research.

Rumor analysis

Gordon Allport of Harvard collaborated recently in a study of rumors—how they originate, convolute, and spread. He calls the book *The Psychology of Rumor*. Even more than in the case of advertising and propaganda, rumor is a study in the pathology of communication. Rumors are typically either grossly distorted facts or free from any factual basis whatsoever. They often move with uncanny speed—a few whispered words and "it's all over town," suggesting another exponential curve.

Allport cites the classic case of the bells of Antwerp in World War I:

Phase 1. A news report by the *Kölnische Zeitung*: "When the fall of Antwerp became known, the church bells were rung." (To celebrate the victory in Germany.)

Phase 2. Le Matin, of Paris, picks up the story: "According to the *Kölnische Zeitung*, the clergy of Antwerp were compelled to ring the church bells when the fortress was taken."

Phase 3. The London *Times* then gets into it: "According to what

Le Matin has heard from Cologne, the Belgian priests who refused to ring the church bells when Antwerp was taken have been driven from their positions."

Phase 4. The story jumps to the *Corriere della Sera* in Italy: "According to what *The Times* has heard from Cologne via Paris, the unfortunate priests who refused to ring the church bells when Antwerp was taken have been sentenced to hard labor."

Phase 5. Back to *Le Matin* in Paris: "According to information to the *Corriere della Sera* from Cologne via London, it is confirmed (sic) that the barbaric conquerors of Antwerp punished the unfortunate Belgian priests for their heroic refusal to ring the church bells by hanging them as living clappers to the bells with their heads down."

Thus a story which started with the simple fact that after a city was taken the victor had the church bells rung in his home country, grew to the fantastic tale of living clappers, and like other famous atrocity stories of World War I was firmly believed by untold millions.

Rumor as negative communication incidentally has a definite remedy—large drafts of positive communication. Every publicity man knows this and likes to tell the truth when he can.

The bells of Antwerp story illustrates not only the way rumor spreads, but also a favorite theory upon which I maintain a passionate and possibly unscientific position: namely, that about the worst crime which anyone can commit is deliberately to foul the communication line. It is like poisoning wells in the desert. We mortals are so prone to believe anything we hear, especially in eight-point type, that a solemn obligation devolves upon those of us who deal in words to do everything in our power to make them clear and true.

The polls

One major aim of serious public opinion research is to let leaders know what the people want and so bring groups in the community closer together. Elmo Roper's suggestion for an official government polling agency to keep Congress and the Administration constantly informed of mass attitudes on public questions is a call for new communication machinery. The polls can help clear the lines in factory, small community, nation, and even in international affairs. Already we are beginning to conduct

parallel polls on questions such as the Marshall Plan, in many nations at once.

Mass media

Archibald MacLeish observed recently:

The development of the instruments of mass communication make it possible for the first time in human history to reach great numbers directly and peacefully and vividly and humanly with an expression of the lives and manners and customs and the arts of people of other nations. . . . Our technology, wiser than we, has given us the unforeseen and unforeseeable means of world-wide understanding at the moment when world-wide understanding is the only possible means to lasting peace.

The radio, movies, telephone, cable, leaflets dropped from airplanes, and the rest, now offer great masses of people an opportunity to look beyond their own culture into other cultures and so to lose some of their fear and hostility. Heretofore only a few anthropologists, explorers, and philosophers have been able to do this.

A documentary movie sponsored by the United Nations may have been inspired by Mr. MacLeish's idea. It takes the audience from country to country showing the faces of the plain people, mostly in wartime situations, with a universal meaning and an irresistible appeal. As an old Chinese woman watches the sky for a bombing plane, the dread and fortitude in her intelligent face make you share her apprehension. A little girl in Poland listening to plans for the United Nations, smiles with a mixture of doubt and longing. The rush of human sympathy aroused by such pictures transcends distance and barriers as a form of "world-wide understanding."

Mass media are also available to promote better communication in unprecedented volume on the home front—whenever we have worked out ways and means to feed something more lucid into the machines. As matters now stand the air is bursting with radio waves while batteries of rotary presses whirl below, but very little which makes sense comes out of them. It is the old paradox of producing rubbish by the most exquisite mechanical precision. Compare the superb instruments in the control room of a large

broadcasting station with "Queen for a Day", or even with the well-meaning confusion of a serious round table.

This brings us to what may prove to be the most useful tool in the whole communication tool kit—the emerging science of semantics. We may have here an engine which will presently be powerful enough to clear away the rubbish, or at least the worst of it, free the communication lines, and allow the mass media to function as Mr. MacLeish hopes. Perhaps I am oversanguine. At least I think semantics deserves a chapter by itself.

CHAPTER 23

Semantics as a Tool

SEMANTICS, as one approach to the larger problem of communication, has three primary aims:

1. To help the individual think straighter.
2. To improve communication between individuals and between groups.
3. To cure abnormal mental conditions. (Alfred Korzybski's "general semantics" is especially concerned with this aim and is thus allied to psychiatry.)

On one level these aims are distinct enough, but on another level they tend to merge. Semanticists are not much interested in dictionary definitions, and have little concern for philology, grammar, or the origins of words. Enough that a certain word or term is here; how shall it be used? Perhaps we should start, however, with two definitions prepared by S. I. Hayakawa for the new *Britannica*:

> Semantics is (1) a study of conditions under which signs and symbols, including words, may be said to have meaning, and a study of possible meanings; (2) a study of human responses to signs and symbols; study of relations between words and things; between language and behavior.

A semantic ladder

With the help of the articles in the *Britannica*, suppose we prepare a ladder of semantics along the line of the "atomic" and "population" ladders prepared earlier.

Aristotle, in his famous laws of thought, or formal logic, started the ball rolling. Indeed, it rolled without further assistance for nearly 2,500 years. This was unfortunate, for Aristotle never really conveyed the difference between words in our heads and things in the outside world. Formal logic tries to make things behave the way words behave, often with the most unfortunate results. Formal logic, for instance, says a living thing must be either "animal" or "vegetable." But biologists have located a number of organisms, like Euglena, a unicellular water organism, which have characteristics of both and cannot be called by either term.

Lady Viola Welby produces the first organized examination of the communication process. In *What is Meaning?* published in 1903, she tries to dig beneath the language structure as given.

Russell and *Whitehead* in 1910 move to the lady's support with their *Principia Mathematica.* Ambiguities of language, they say, "conceal illegitimate totalities"—meaning the misuse of high order abstractions.

Ludwig Wittgenstein and the Vienna circle of logical positivists, following Russell and Whitehead, conclude that "practically all the traditional problems of philosophy are senseless. . . . Most questions and propositions of the philosophers result from the fact that we do not understand the logic of our language."

Ogden and *Richards* publish their classic volume, *The Meaning of Meaning,* in 1921. Ogden then invents Basic English, while Richards uses semantic principles in analyzing literature.

P. W. Bridgman, whom we have repeatedly mentioned, makes a profound contribution not only to physics but to semantics with his concept of the "operational definition" of terms. Length, he says, is determined not by something you say with your mouth, but by something you do with your hands. *The Logic of Modern Physics* appears in 1927.

Lukasiewicz and *Tarski* in the early 1930's invent a workable, consistent, many-valued logic, which supersedes the misleading certainties of formal logic.

Alfred Korzybski publishes his unique and massive formulation of "general semantics" in *Science and Sanity* in 1933. The title indicates the psychiatric approach.

The International Encyclopedia of Unified Science, with a

strongly semantic base, is launched in 1938 under the sponsorship of Otto Neurath, Niels Bohr, Bertrand Russell, John Dewey, Rudolph Carnap, and Charles W. Morris.

A legal group, including Morris R. Cohen, Jerome Frank, Thurman Arnold, and Karl Llewellyn, in the thirties begin experimenting with various semantic approaches to the law.

A group of anthropologists started by Malinowski and Sapir concludes that language, far from simply expressing thoughts, actually determines the character of the reality one apprehends. Sociologists like Lundberg are also using semantics, while Dr. Norman Cameron, the psychiatrist, says: "Although for convenience we shall have to make a distinction between language behavior and thinking, in practice it is often exceedingly difficult to say when one begins and the other leaves off. . . ." (If you doubt this, suppose you try to evolve a wordless line of thought.)

From here on—it is now about 1940—our ladder branches in many directions, and perhaps the simile of the team of acrobats standing on one another's shoulders becomes more appropriate. You will find a full bibliography in the new *Britannica.* More and more books are coming off the presses, and a quarterly journal *ETC.* is published by the Society for General Semantics in Chicago. By early 1948, general semantics is being taught under various titles in twenty-two colleges. It is used in labor-management problems, selling, personnel work, medicine, psychiatric work, counseling, and other fields.

"General semantics"

Alfred Korzybski, born in 1879 in Poland, has had wide experience as engineer, mathematician, author, industrial administrator. He held the counterpart of Bernard Baruch's job in World War I in Russian industry under the czar. After ten years of intensive research in the literature of the physical sciences, psychiatry, psychology, and physiology, he wrote *Science and Sanity.* It is a difficult book, repetitious and often dull, but I think history will conclude that something of the first importance has been added to the storehouse.

Korzybski holds that our moment-to-moment behavior, as well as our mental health, is determined by prescientific assumptions

embedded in the language we learned as children. Scientists, for instance, fight shy of two-valued logic; but our language structure practically forces us to choose between black and white with little allowance for shades of gray. The beliefs men hold, says Korzybski, wind up in the nervous system. If the beliefs are scrambled, so will the nerve functions be.

In scientific work men escape this bondage to language by using special symbols, especially those of mathematics, which are closer to the reality of processes in nature, and also correspond better to the human nervous system. Korzybski has not proved this last point but it is a challenging hypothesis. Certainly the atomic scientists show a type of direct thinking denied most mortals. Korzybski predicted in 1933 that our young physicists, because of the new types of communication they were beginning to use, would be the hardest, straightest thinkers the world has ever seen, and his prediction has come true. By getting the principles of semantics into their heads, it is hoped people generally will begin to think as hard and straight as the physicists.

General semantics uses the analogy of a map in three basic premises:

1. A map is not a territory. Words are not the things they represent.
2. A map does not represent all of a territory. Words cannot say *all* there is to be known about anything.
3. A map is self-reflexive. An ideal map of its own territory would include a map of a map of a map. We can speak words about words about words, etc.

Inside each of us lies a picture of the world. It stands for the whole realm of material objects, happenings, relationships, out there. Into our picture has gone everything we know, or think we know. It is our *map* of reality, without which we could not find our way through life at all. We are well adjusted in proportion to its correctness and in proportion as we remember its limitations. The general semanticists continually emphasize this.

When we talk we force words into certain definite relationships. Yet the actual things which these words or symbols represent may have quite different relationships. This happens because the grammar and logic we use still preserve many prescientific and errone-

ous guesses about the world—as, for instance, "similar things may be regarded as identical," or "parts of things may be considered without relation to the whole," or "essences of things never change." Such notions were once the best the race had, but scientists have found them too inaccurate to tolerate, and have found better symbols in multivalued logic and mathematics.

People who use the old symbols in a rigid and absolute way find it very hard to solve problems, either in their own libraries or in a committee meeting. They fight, argue, disagree, won't play. People who recognize symbols for what they are, with careful attention to relationships, do not carry so many chips on their shoulders; they have found the path to agreement. They have good, usable maps.

Types of semantic blockages

When meaning does not come through the communication line is blocked and X does not know what Y is talking about. More serious still, Y may be headed for a mental hospital if he comes to believe that map and territory are identical. The types of semantic blockage include:

Confusing words with things.
Confusing levels of abstraction.
The inability to distinguish between a fact and an inference.
Faith in absolutes.
Leaving important characteristics out.
False identification.
Two-valued judgments.
Belief in the power of words as such—word magic.
The pursuit of meaningless questions.

Social science has often been seriously afflicted with abstraction trouble. Terms have been invented—high, imposing terms, terms to make a man cross himself—and presently because the word is there people have assumed that a *thing* must be there to correspond to it. Soon their minds become populated with entities which nobody has ever seen and no camera can ever find, a brood of verbal ectoplasms.

The political scientists are the liveliest innovators of such terms

but the economists are not far behind, while the psychologists from time to time produce such verbal monsters as "adient response," and often use the first ten or twenty pages of a monograph for special esoteric definitions. Where in the space-time world could you point your camera to observe such phenomena as "statism," "free enterprise," "economic determinism," "capitalism," "socialism," "democracy," "totalitarianism"?

These terms may or may not have technical utility as labels for tying up bunches of observed facts but they certainly represent no living entities. Yet people are constantly acting as if they did refer to something living, breathing, out there beyond our minds. In the company of such abstractions, meaning so many different things to different men, the scientific method comes to a complete standstill.

The case of David Lilienthal

An outstanding example of false identification—which assumes that because words are the same, things must be the same—was the attempt of Senator McKellar in 1947 to prove David Lilienthal a Communist and thus unfit to serve on the Atomic Energy Commission. The senator established the fact that his parents had been born in Czechoslovakia, then a part of the Austro-Hungarian Empire. The parents came to America before the turn of the century and settled in Illinois, where David was born. McKellar pointed out that Czechoslovakia is now under Russian domination. The Russians, of course, have been Communists since 1917. Therefore all Czechs are potential Communists; therefore everybody who ever lived in the region is tainted with Communism, including their offspring wherever born. Therefore David Lilienthal is a dangerous man and should be denied the post!

All this was solemnly argued in an important committee of the most influential legislative body in the world. It was respectfully listened to, taken down in detail by court stenographers, reported at great length in the press and over the radio. No one knows how many people who read the account agreed that the senator had established a legitimate Communist taint. Whether McKellar believed it or not is beside the point. He would not have used the technique unless he was sure that enough people would believe it to help his case.

Quiz program

In lighter vein here is another illustration of communication failure.[1]

"Mrs. Lee, do you think women are better housewives than they used to be?"

"Which women?"

"Which women? Why, any women."

"But I don't know 'any women.' I only know certain women."

"Well, then, the women you know. Are they better housewives than they used to be?"

"In the first place, I don't know what they used to be. In the second place, I don't know what you mean by 'better housewives.' Do you mean, do their draperies match their slipcovers? Do you mean, do they check the ceiling prices before they buy? Do you mean, do they cook vegetables without destroying the vitamins?"

"Why, yes, we mean all those things."

"But I can't answer all those things at once."

"Well, then, answer one of them. Let's say, do the women you know cook vegetables without destroying the vitamins?"

"I couldn't say. I've never tested their vegetables for vitamins. Wouldn't know how to."

"Well, just give us your opinion, Mrs. Lee."

"What good is my opinion? That isn't a matter of opinion; it's a matter of fact. The only way I can answer that question is to go and test their vegetables."

"But can't you just make a guess?"

"Oh, well, if you want me simply to guess, I can do that. Yes, my guess would be that most of the women I know destroy some of the vitamin value of vegetables by cooking. But actually, of course, I don't have any way of knowing."

"So, Mrs. Lee, you maintain that women are not better housewives today than they used to be. Well, we're all entitled to our own opinions, aren't we, folks?"

"Look here, I didn't say that. I made one little guess and you puffed it up into a big generalization."

[1] An imaginary interview prepared by the wife of Irving J. Lee, author of *Language Habits in Human Affairs* after she had listened to a quiz program sponsored by "Fluffy Duff."

"Thank you very much, Mrs. Lee."

"Why don't you quit asking people these ambiguous questions?"

"Thank you very much, Mrs. Lee."

"And what's more, the first time I hear a sidewalk interviewer who can distinguish between statements of opinion and statements of fact, I'll buy a whole case of your Fluffy Duff."

Some useful mental aids

On the constructive side, Korzybski has made many stimulating suggestions. He has also invented five ingenious little devices to help a person check his verbal maps. Here they are:

Indexes. When thinking about individual units in a category, particularly about individual persons, mentally affix an index number. Call them for instance, $Adam_1$, $Adam_2$, $Adam_3$ to remind yourself that every unit in the category is different. No two men are precisely alike—not even identical twins; no two cows, no two ants, no two grains of sand are precisely alike. Physicists used to think that two atoms of, say, hydrogen were identical, but with the discovery of isotopes they are not even sure of that. In my own thinking and writing I use indexes as one form of insurance against the spell of absolutes. We have already employed them in this book in distinguishing social $science_1$ from social $science_2$.

Dates. This little device serves a similar purpose. It consists in putting a date mentally or actually on a space-time event. The idea is to stop and remember that the situation *now* is not what it was one hundred years ago, or ten years ago; or, for that matter, ten seconds ago. Life is a process, irreversible and ever changing. $America_{1776}$ is not $America_{1861}$ or $America_{1948}$. To speak of "the American way" as something fixed and eternal is to speak nonsense. What "way" were the majority of Americans following at the date you had in mind?

The Russian $government_{1940}$ was attacking Finland and in the doghouse so far as most Americans were concerned. To make matters worse it had signed a nonaggression pact with Hitler. But the Russian $government_{1943}$ was our dear ally and most helpful friend, tying up the cream of the Japanese Army in Manchuria and the bulk of Hitler's divisions in eastern Europe. Now the Russian $government_{1948}$ is back in the doghouse. The dating device

aids one in remembering these shifts and keeps him exceedingly wary of putting the Russians or anybody else into timeless categories.

"Etc." Sometimes I think that this little semantic gadget is the most useful of all. Every event has almost unlimited characteristics, and the "etc." forces one to remember this. Even the physicists must leave some characteristics out in analyzing an event—say the structure of a crystal. Social scientists leave out far more when they study, say, the effects of mass production on factory workers. The man on the street in ordinary conversation may leave practically all the characteristics out of the event he is discussing if it is at all abstract, and make a snap judgment based on his emotions at the moment. Observe that this warning goes much farther than "seeing both sides." A space-time event usually has an unlimited number of dimensions; to reduce them to two is the old "black or white" illusion into which most debaters pitch headlong.

Let us take another illustration of the uses of "etc." Here is a prosperous gentleman, Adam₁, thinking about unions: "Unions are bad, they ought to be abolished, they hold down production." Then, with a gesture toward factual support he says: "Look at Petrillo, look at John L. Lewis." But if our friend had "etc." in his mental armory, he would remember that there were a number of other things to be said about unions. For instance, as a total movement they are a massive bulwark against the spread of communism in the United States in 1948. It is true that some unions practice featherbedding and restriction of output, but it is also true that the Amalgamated Clothing Workers have sometimes loaned union funds to employers to keep them solvent and productive.

Here is still another example: Moscow newspapers publish many statements like this: "Lackeys of imperialism in the US Government are the tools of Wall Street billionaires." Applying the "etc." idea, we soon find some of the characteristics this statement leaves out, such as:

1. Wall Street brokers have never recovered their pre-1929 prestige.

2. The Department of Justice is now (1948) bringing suit

against a number of important Wall Street firms under the anti-trust law.

3. Depreciation allowed by the Bureau of Internal Revenue in computing income tax has made many large corporations independent of Wall Street financing.

4. With a national debt of $250 billion, the Treasury at Washington, not Wall Street, is now the financial center of the US economy.

5. Income taxes on "billionaires" have reached 86 percent in the top brackets.

6. Big Labor is probably as strong a political influence today as Big Business.

These characteristics when listed reduce the Moscow declarations to utter nonsense.

Quotes. Another device to remind ourselves that we are dealing with an abstraction of a high order is to use quotation marks around the term. They are particularly useful with such words as "democracy," "capitalism," "fascism," "liberty,"—indeed with every term on whose meaning any two men are likely to disagree. The quotes serve warning that this is a high order term and must be used carefully.

If high order abstractions are so likely to foul the communication line it is sometimes objected that they should not be used at all. One is tempted to answer: if people drown so frequently, why use water at all? In one sense every noun, even such a concrete term as "oxygen," is an abstraction, for it is not the thing itself but only a symbol of the thing. Even on the nonverbal level, the H_2O we see with our eyes and touch with our skin is abstracted by our senses from a mad dance of atoms on the submicroscopic level. Without higher order abstractions which classify and tie up bundles of lower order phenomena, a person could not think at all. Reading and writing and mathematics would be impossible without abstract terms; man would cease to be man. Abstractions in their proper place are as necessary as food or drink. *One must be conscious of using them and careful not to abuse them*—that is the point the general semanticists make.

Hyphens. Korzybski's last mental device is the use of hyphens to tie words together when the things they represent are inseparable. "Space-time," for example, and "body-mind."

The important point about the five devices—*index, date, etc., quotes, hyphen*—is not so much to put them on paper as to get them into one's nerve currents so that one stops and thinks rather than rushing to an emotional conclusion. They are five little red lights bidding one stop, look, and listen.

Once when I tried to explain these devices to a friend he replied in some heat: "What is the use of talking at all if you have to go through all that elaborate performance? Far from relaxing nervous tension," he said, "I should think semantics would make you cross-eyed looking for galloping generalizations and characteristics left out."

This is a sound point but there are two answers to it. In the first place, people who practice these stop-look-listen or delayed response methods do not appear to be coming down with schizophrenia but the contrary. Secondly, suppose the world outside our heads cannot in fact be comprehended by human beings without some such "extensional" thinking? Suppose it is the surest way we mortals can get reasonably true reports and keep our verbal maps in line with reality?

The future of semantics

Whatever the future of semantics may be as an aid to psychology and psychiatry, there can be no doubt of its usefulness in communication and straight thinking. It might be a good idea for every big executive, whether in the State Department or in business, to have a semanticist within reach to make sure that all major characteristics are accounted for before the boss makes a Big Decision. Secretary Morgenthau laid down a policy for Germany, apparently forgetting that the Ruhr was the Pittsburgh of Europe. Tojo gave the word to smash the Pacific fleet at Pearl Harbor, forgetting the American industrial ability to build larger and better fleets in a relatively short time. The very biggest people seem to be constantly making the most calamitous decisions, and one reason is certainly failure to get the characteristics in.

Meanwhile, wider communication is urgently needed in social science. Each discipline and often subdiscipline has its own technical lingo and it is nobody's business to translate all lingos into some kind of basic English.

This brings us back to Elton Mayo's proposal that the social sciences band together in a great unifying research project covering communication in all its manifold aspects. Nothing could be more welcome. Out of it might come the structural foundation for that single science of man which is the ultimate goal of all the disciplines.

CHAPTER 24

Reforming the Reformers

TO ONE who has been advocating reforms of one kind and another ever since he read Henry George in 1912, social science in its more rigorous aspects comes with something of a shock. Your author looks back at his enthusiasms and begins to realize that some of his aims were unachievable, and most of his means were unworkable. Clearly he will have to start all over again from the beginning, and he is not as young as he was. The sorrow is mitigated, however, by the possibility that this time we might really get something done.

We are speaking of reformer$_1$, who genuinely wants to see conditions remedied without a personal motive. Reformer$_2$, on the other hand, as the psychologists describe him, is a frustrated individual with something wrong at home, or on the job or in his emotional life. He takes to communism, currency reform, or alcohol, as an escape from his personal troubles. Reformer$_2$ furthermore, tends to select a cause where he can do a lot of hating—for instance communism with its hierarchy of demons: "capitalists," "Wall Street," "imperialists," "the bourgeoisie," "Trotskyites," and lately "socialists." The best service which science could render this kind of reformer would be to clear up his neurosis.

What can social science do for the other kind? A number of helpful suggestions are on file and more are being accumulated all the time. We have met a few of them earlier and will now try to get them in some sort of order. This chapter is addressed to

those who seriously want to change an institution or a custom in the culture.

Perpetual motion machines

Perhaps the first task for reformers is to study the history of perpetual motion machines. For centuries, some say as far back as the Greeks, ingenious persons have devoted their lives to a search for the principle of perpetual motion. Some of them wanted to make their fortunes, some wanted to make a great name for themselves; most, perhaps, were just curious. (Veblen once defined science as idle curiosity.)

Whatever their motives the inventors spent years of devoted labor constructing frictionless wheels, ball-bearing spheres, dissolving chemicals, and mechanical constructs that would amaze Rube Goldberg. The wheel which the Marquis of Worcester devised in 1660 was fourteen feet in diameter and elaborately rigged with forty sliding weights of fifty pounds apiece. Even Leonardo spent some precious time on a wheel to turn itself forever by quicksilver. The screw of Archimedes, the "hydrostatical paradox," and capillary attraction were all employed by the savants from time to time. Crackpots to this very day are working on electricity, magnetism, natural heat, and liquid air, hoping to give their construct a shove which will keep it going forever.

As early as 1775 the Paris Academy of Sciences refused to receive any more schemes for *perpetuum mobile*, though the theoretical refutation was still far from complete. When the first and second laws of thermodynamics were laid down a little later, however, perpetual motion machines were thrown finally out the window. Nobody in his right mind would ever again waste time on them—except to sell a gold brick to the scientifically illiterate.

How many social and economic mechanisms for reform—agitated and supported by leagues, societies, institutes, celebrities, mass subscriptions, high-priced publicity agencies, and high-powered pressure groups—are perpetual motion machines? Every morning as I open my mail and the appeals and summonses to action drop out, I finger them and wonder how much of a *perpetuum mobile* is this, and had the Marquis of Worcester anything to beat that?

The social scientists have not yet produced generalizations as

elegant and definitive as the first and second laws of thermodynamics, but they have produced enough to raise a large question mark over my mail. They are certainly as far along as the Paris Academy of Sciences when it banged the door. Already they have chilled my crusading zeal, built up my bank account, and caused me to get a bigger wastebasket.

Here is a sample from an individual inventor. During the depression I received literally hundreds of such plans to save the world, representing incalculable devotion by their authors.

> DEAR MR. CHASE:
>
> The fateful years prior to and during the late war with their terrible aftermath have impressed all thoughtful people with the pressing need for some basic change in our social system.
>
> In my manuscript, *The Perfect Answer,* I have outlined a plan to eliminate the boom and bust economic cycle, as well as the peace and war political cycle. I have also devised a transition period which would ultimately give us the perfect world of tomorrow through a form of evolution allowing complete fairness to all concerned.
>
> Feeling that you would be interested, I am mailing you a copy of my plan. Please send me your comments as soon as possible and suggest what publisher would be most interested in it.
>
> Yours very truly,
> ERNEST MEAD.

Mr. Mead—I am shielding his real name—is only too obviously on the side of the angels. But I am afraid that he was beaten—by the laws of the culture concept—before he started.

Ralph Linton explains in one sentence what is wrong with most Utopias and with omnibus schemes like Mr. Mead's. "The greatest difficulty which confronts a leader who seeks to develop a new society is that he has to start with persons who have already been trained to live in some other society." The Utopia-builder can compose the most admirable codes, rules, laws; but the wayfaring citizen is incapable of accepting them no matter how much he may desire to. "People live mainly by habit, acting as they have been taught to act without stopping to think first." In Utopia they

would have to stop and think before nearly every act and would probably go mad long before they acquired a new set of automatic habits.

Training for one's culture as we have seen begins at birth. By the time George Rutherford Adams is even half-grown he has accumulated a thick mass of unconscious habits closely fitted to his Middleburg society. To change them would be a slow, difficult, and deliberate process. If George's son were some day sent to live in a Chinese village, the boy could probably shift over within a few years. But if a large group of Americans go to live in China, they will take most of their culture with them and not even learn the language. The typical Utopian reform is like trying to move a whole American town to China and teach it to become Chinese overnight. It is a *perpetuum mobile.*

When reform has a chance

A second fundamental principle for reformer₁ is that a successful movement requires enough tension and frustrations in the society to offer some real leverage. When the majority of citizens are going contentedly about their business, the reformer had better teach the rumba. A good illustration is the post V-J Day period in the United States when, with 60 million employed, all large plans for housing, health, minimum wages, inflation control were received with yawns. There was not enough social frustration to give them a chance, however useful these reforms might have proved in the long run.

A major problem of the reformer is to determine when the lag between belief system and real need is great enough to promise some success in modifying an institution. Franklin Roosevelt, who was far from being a typical reformer, happened to arrive when the lag was long and a change overdue. Three years of economic blizzard had made the need for jobs, food, security, abnormally great. The credos and belief systems of American culture, with their insistence on self-help, were getting very shaky. Action was accordingly possible over a wide front and Roosevelt moved briskly in with a whole alphabet of reforms. The tensions, the frustrations were there; and though the credos began to revive for the well-to-do about 1935 as we noted in Middletown, the needs of the mass of the people were strong

enough to re-elect Roosevelt three times, a political phenomenon without precedent.

Communication again

Had Roosevelt been aware of this background he might have built his communication lines more strongly and achieved a wider area of agreement. He saw the situation unfortunately in the terms of a fight, good people against bad, when it was not that kind of situation. He called the "bad people" a number of hard names—"money changers," "economic royalists," and the like. Naturally this infuriated the well-to-do; and they heaped on Roosevelt all the frustrations and fears which the depression had aroused in them. If the President had spoken in the name of *all* the people whom the depression had hurt or bewildered and summoned them as a unit to move toward recovery and freedom from fear, much of the Roosevelt-hating might have been avoided, while belief systems might have shifted to a position nearer the facts almost automatically.

The point is that the great depression provided one of the few periods in history when a large majority of the people were ready for extensive changes. Due partly to bad communication, however, this potential agreement failed and instead of it we had turmoil, name-calling, and social friction.

Class struggles

Many reform movements, as we noted earlier, assume that there is an inevitable and timeless conflict between rich and poor, the classes and the masses. But Linton finds the class struggle valid only in special circumstances. Two types of conflict are always latent in a given culture: between the individual and society; and between groups inside the society. The individual is kept in line by formal or informal penalties ranging from ridicule, through ostracism, to death at the hands of the law. The important thing to remember, observes Linton, is that these penalties are rarely used. Most individuals are successfully conditioned to the patterns they are expected to conform to and carry them out unconsciously. The thief and the murderer get the headlines but they are exceptions; in handicraft societies even stealing is rare.

Among the Sakalava of Madagascar, for instance, when a person steals for the first time the circumstances are carefully

investigated. If the thief was actually hungry, he is given land and a chance to reform. If he steals again, he is speared—not in a spirit of revenge but because he has shown himself a liability to society.

Struggles between groups, or class struggles, are not important in societies where all members have status. Even the Untouchables of India value their status and are not much tempted to revolt—also they expect to move up a few layers in their next incarnation. Class struggles arise when status is being undermined—as the machine undermined it in Europe in the nineteenth century. As a result, factory workers were under continual tension because they had no accepted place—until labor unions were invented to help them out. In the United States status has never been rigid, except for Negroes. Classes are mobile, as the Yankee City study proved, and the proverb "shirtsleeves to shirtsleeves in three generations" drives it home. Few Americans care for the role of "proletarian;" while the managers of industry, as Berle and Means pointed out, have superseded the "owner" and prevented any solid front among the "capitalists."

I would venture a guess—a wild one to be sure—that a majority of all the economic reform energy in this country over the past fifty years has been directed to a *perpetuum mobile.* People were trying to capitalize on a "class struggle" which was not there. Old-line socialists, dimly recognizing this, used to complain about the "dumb" workers who could never be brought to recognize their class interests.

In chapter 10 we observed a few perpetual motion machines in the efforts to improve race relations. We concluded that where a caste system exists, as in the deep South, reforms based on logic, justice, reason, are unavailing, while strong-arm measures are likely to backfire. People in the deep South hold their belief systems as sincerely as people in the North. To them, logic, reason, and justice are on the side of caste. They will fight any one who tries to destroy caste abruptly or violently. Reformers who neglect these findings of social science are squandering their energy and the funds of their well-meaning subscribers.

Suggestions from W. F. Ogburn

Dr. Ogburn, celebrated as a student of social change, has some sound suggestions for reformers along the same line. If you

want to change something, he says, the first thing to do is to figure out the social forces which will aid the change, and those which will oppose it; in short prepare a balance sheet of social forces.

The next step is to study carefully three important factors which are bound to affect any but the smallest change, namely: (1) the natural environment; (2) the biological factor, or heredity; (3) the going culture.

Natural environment changes only over long periods; but man can control it to a degree by using coal-heated houses, igloos, woolen clothing, umbrellas, air conditioning, snow plows, headlights, deep freezes, TVA systems, irrigation, contour tillage.

Human heredity has apparently not changed much since Cro-Magnon man. Eugenics programs to modify *homo sapiens* deliberately are mostly talk, though we see what might be done by the effects of deliberate breeding on plants, fowls, and animals. Fortunately, in the present state of knowledge we cannot tamper with our genes, which are singularly well encased against reformers. Even sterilization reforms do not get very far; Hitler provided some revolting examples in this department. The genes possessed by different family lines, says Ogburn, are still little known. The best thing we can do now is to reform our diets, especially by the better feeding of babies, and so improve the human stock biologically *during their lifetime.* Already we can observe the effects of orange juice, green vegetables, and plenty of milk on the present generation of college girls and boys. When measured they are found to be taller, heavier, and larger-footed than their parents.

Coming to the third factor, Ogburn agrees that culture is difficult to change, but maintains that progress can be made if the reformer carefully fits his program into the folkways and allows for cultural lag—a precaution which Franklin Roosevelt did not take. One "New Deal" reform—the Food Stamp Plan—always interested me greatly. So skillfully did Milo Perkins, its inventor, map his campaign that when the plan was finally launched on a nation-wide basis it was everywhere accepted, even applauded, without a single vested interest in opposition. Mr. Perkins had calculated belief systems in advance and so achieved a triumph probably without precedent in the history of American reform movements.

Reforming the head-hunters

Head-hunting is a strong culture trait in various primitive tribes, but it may lead to rapid depopulation, as in Melanesia, and colonial administrators are always trying to abolish it. Some of them have succeeded. In Sarawak, British reformers have abolished the active practice but have wisely kept the belief systems and traditional forms. Officials hold old skulls as trophies and issue them for a given ceremony, like library books or folding chairs. Among the Papuans, meanwhile, bridegrooms have been persuaded to offer a boar's skull instead of a human skull to their brides as proof of manhood. It is pointed out that a boar is harder to get than a human, especially a woman or a child, and is therefore a much better proof of manhood. The logic has proved persuasive.

These, like the Food Stamp Plan, are examples of really effective reforms. Belief systems are maintained while the harmful practice is eliminated and face is saved.

Unfair competition

Such prevision and calculating take time, while the reforming temperament usually wants immediate action. "Unbridled social idealism," says George Lundberg in *Can Science Save Us?*, "unbalanced by scientific criteria as to possibilities and cost, is a social liability and in effect a type of fraud on the body politic." Better if the crusade had never been launched. The national prohibition law of 1920 was probably of that type for it was promoted, at least in part, by fanatics who lacked the remotest idea of the culture concept and the forces at work. Alcoholism is a social calamity but it must be fought by a different strategy altogether.

Social scientists have been at a disadvantage in competition with professional reformers who promise quick, complete, and painless cures. It seems to require the display of many unworkable perpetual motion machines to convince people that they really won't work. But now the scientists are getting into a position to tell us not only what won't work, but what might. I, for one, would like to see a series of competent scientific reports on such current proposals as:

Restoring international free trade.
The Townsend Plan.
The Social Credit proposals.
Union Now.
A wide extension of Rochedale cooperatives.
Streamlining Congressional machinery.
Universal installation of the metric system.
"Greenbelt" communities as practical decentralization.
Extending TVA techniques to other river systems.
Issuance by Federal Reserve Banks of non-interest-bearing bonds, as proposed by ex-Congressman Jerry Voorhis.

Laboratory of social change

Opportunities for analysis of such proposals as the above are virtually limitless. Every day there is a new one, judging by my mail. Perhaps a permanent laboratory should be set up by a responsible body of social scientists where reforms are dissected. It might even be made self-supporting. When one of us is seized with a plan to save the world, or any part of it, he might take his blueprint to the laboratory, and for say $100 get a report on any stray elements of perpetual motion it might contain. This might often save $10,000 worth of energy and emotion for an average disinterested reformer.

This is really a sensible and practical proposal. Inventors of nonpuncturable tires and plastic dishwashers can choose among a number of testing laboratories, to say nothing of patent attorneys and Consumers Research. Social inventions may be somewhat more difficult to analyze, but a scientific appraisal would also seem to be in order.

The muckrakers

Lincoln Steffens made a significant contribution to political science during the great muckraking era a generation ago. He cut through the stereotype of the big, wicked political boss to the underlying situation and gave us the real story in terms that fitted the culture concept. He found a leader manipulating a group by methods which satisfied group needs in that situation.

Poor people in the great cities of the power age have deep-seated needs, both material and emotional. Their economic security

is low, their status indeterminable, and their relations with a face-to-face group uncertain and often unsatisfactory. Into this situation steps the city boss. He finds out what the people want and in exchange for votes proceeds to satisfy them as best he can. He sends a basket of groceries to a hungry family, finds a job for an unemployed bricklayer, delivers a ton of coal when the thermometer drops to zero, and a turkey to all the boys on Thanksgiving. Above all, through the "organization," Tammany Hall or what not, he recreates the face-to-face group. It may be a sorry substitute for the old handicraft community but it is a substitute.

By this service the boss not only wins votes for the party and power for himself but he actually keeps down frustration, bitterness, and even violence. If the Japanese-Americans at Poston had had a "boss" to discover their needs and satisfy them, tension might not have mounted so high. A case could be made, though I do not remember that Steffens ever made it, that the political boss is the institution which keeps Megalopolis from actual disintegration.

In contrast with this shrewd analysis, the reformers, muckrakers, "do-gooders," Steffens pointed out, conducted their strategy on the hypothesis that bosses were "bad," that politics was "dirty," that poor people were weak and gullible—and not very clean, either—and that "good government" with a spry businessman in the mayor's swivel chair was the only answer.

After spirited reform campaigns, businessmen swiveled in hundreds of chairs but they did not prove to be the answer. The voters, it turned out, missed the boss. If Uncle Timothy dies, the boss calls to express his sympathy and helps out with the funeral expenses. The boss can tear up a parking ticket or fix up a juvenile offender for a grieving mother. "All of these rewards," observe Miller and Dollard, "are immediate and therefore more effective than the delayed consequences of good government." The real task of a municipal reformer is thus very different from the assumed task; it is to beat the boss in finding out what people need and meeting those needs.

National planning

Reformers who advocate national planning will find some excellent advice in the London *Economist* during 1947. Suppose,

says the *Economist,* that on V-E Day Britain had called her best social scientists together to plan for demobilization and reconstruction. *First,* the planners would use the polls to find prevailing public attitudes. What do people want most—what will they stand for? *Second,* the planners would appraise Britain's foreign balance of payments, exports, imports, US loans and lend-lease with a cold and calculating eye. *Third,* they would appraise Britain's output possibilities with a similar eye. *Fourth,* they would try to assess the attitudes of the Russian government, the Indian leaders, and to find areas of possible international conflict and danger.

On the basis of a series of good, hard looks, the planners would block out a dynamic, flexible program, and use all the modern arts of communication to make it known and appealing to the British people, and also to the people of the United States.

But what actually happened? asks the *Economist.* The Labor government did not use the polls to find out what people wanted; it had no clear idea of the needs of the people at all. It made too many campaign promises. Then the government tried to keep some of its promises, like permanent housing, a project completely out of place in the immediate postwar emergency. It forgot other promises. It hushed up bad news, believing that people could not stand it. Yet social psychologists know that in many emergencies people stand things better if they are frankly told the worst. Winston Churchill was wise enough to promise nothing but blood, sweat, and tears.

Finally and most serious of all, says the *Economist,* the Labor government wasted much valuable time in trying to nationalize industries on the Marxian formula. The coal industry was breaking down under private management and *had* to be nationalized, but certain other nationalization proposals were dubious even in normal times.

In a democratic state, the planning must be done by political parties. Yet no economic policy is right at all times, and the skilled economic planner must know when to reverse his engines. But political parties are not equipped with reversing gear. In 1931 the Tories showed how stubbornly they could defy the facts and follow a policy of contraction in the middle of deflation. Their performance has been equalled by the Labor Party since 1945 with its devotion to the trade union doctrine that it is always right for the pay envelope to grow. Clearly,

if it is unsafe to let the Tories out of jail in a slump, the Labor Party ought to be locked up in times of inflation. . . . However in spite of the doubts, mankind is not now going to abandon the resolve to be master of its economic circumstances.

If the *Economist* is right that nations from here on are going to try to plan their economic destinies, the social scientist becomes a figure of the first importance. Working in a team of specialists, getting the characteristics in, watching his abstractions, everlastingly digging for the facts—he can advise a government whether its plans have a chance to succeed, or are just so many perpetual motion machines.

Even more pressing, however, at this particular point in history is a question on a still higher level: How can international tensions be reduced and a peaceful world achieved? In the next chapter we will examine what help social science has for us here.

CHAPTER 25

Approaches to One World

THERE is no solution to war in any of the more primitive problem-solving techniques from magic to common sense. Why not, you ask, in a world-wide religious conversion? Because in the present diversity of cultures that is an impossibility—or shall we say it has a probability of one in several billion? The faster a new religion might spread the more danger of arousing an opposition and thus creating a highly charged division, or a series of divisions. Moslems, Hindus, Jews are not going to embrace a new religion overnight.

Meanwhile, a self-imposed mission of peace can be a vigorous breeder of war; remember the noble motives for the Crusades, and America's two wars "to end war" within the past generation. A world-wide mass movement for peace could conceivably succeed, as there is a world-wide demand. It would have to be guided however by wise leaders schooled in the culture concept, the new communication techniques, modern political science, and planetary rather than national economics.

No, if war is to go, it is probable that only the scientific method can hasten its going. The diplomats, the philosophers, priests, poets, and sages have not found the answer. Their hearts may have been in the right place but they have never been able to state the problem in practical terms, let alone propose a workable solution. Furthermore, while war has not been proved a cultural "universal," it is a very ancient and deeply grooved institution, not to be dislodged by less than heroic means.

Agitation among the physicists

One of the most significant effects of Hiroshima was the sudden eruption of atomic scientists into politics. It is hard to recall anything in the history of science to parallel it. Why did they organize so spontaneously—the Chicago group, the Los Alamos group, the Emergency Committee of Atomic Scientists with Einstein at their head—and begin to issue statements, bulletins, articles; and come down to Washington to lobby like so many cattlemen for a favorite bill? The analogy is not quite exact however. Cattlemen always lobby for cattlemen; the physicists were lobbying to save the world, trying to rescue mankind from the consequences of their own work. As Oppenheimer said, they had "known sin" and a sense of guilt may have been in the drive. At the same time it was a fine and stirring thing for them to do.

There was another significant aspect. In breaking out the way they did strictly on their own, the atomic scientists implied that nobody else was ready with any knowledge to help stop war. Apparently it did not occur to them until later to inquire what the social scientists had to offer, or to join forces with them.

Well, what *have* the social sciences to offer? Will they tell us that One World is just another perpetual motion machine? They had better not. The physicists will ask for proof and there is none. Nobody knows whether the time is ripe for the political organization of the planet; nobody has given the matter a fraction of the objective study that Kinsey gave to the sex habits of American males, or Flanagan to testing pilots. The idea of a world state is very honorable and very old but it has been approached on the level of poetry, philosophy, or social science₂. To say now that it is either possible or impossible is scientifically unwarranted. We just do not know.

Three questions are involved in any attempt to apply science: (1) What accredited knowledge is now in the storehouse? (2) How can it be put to work? Where are the engineers? (3) What are the gaps in available knowledge? What research projects should be set up to fill them?

Let us make a running inventory of each of these points.

Knowledge Available

We will not attempt to assemble all the dependable knowledge available for an attack on the problem. In the foregoing chapters, however, we have repeatedly struck leads which offer assistance, especially in the culture concept. The findings of anthropology are cardinal to the formulation of any plan for peace. They stand as a permanent mentor to international policy. Mankind being made up of scores of cultures, any attempt to impose an existing pattern, American or Russian or German, will lead to violence—the same kind of violence that a sudden imposition of equal rights would lead to in the deep South today—and cannot hope to succeed. The culture concept warns us not to risk the future in any such wild attempt. Especially it makes it plain that we cannot shoot "democracy" into people, any more than the Russians can shoot "communism" into people.

Some corollaries of the culture concept

Peace projects must be intercultural as well as international. A world rigidly pressed into one culture could be held together only by brute force, and that for a short time.

Another corollary is that it takes only twelve to fifteen years to train a newborn child to be at home in his parents' culture, or any other into which he is accepted. Less than a generation would be enough to train *all the children of the world* to be citizens of the world. The training program would not be too difficult to draft, but the practical obstacles are very serious. How, for instance, shall we train the teachers whose culture patterns, like concrete, have already set? Even more serious, how shall we introduce the change politically? The fact that the generations can be changed, however, is encouraging.

A third corollary of the culture concept is the new understanding of problems concerning the in-group versus the out-group. This is a subject on which the anthropologists, sociologists, and psychologists meet, and is close to the root of nationalism and patriotism as well, for it is a *mutual* relation between a member and the group to which he belongs. At one end of the scale are tribes like certain Copper Eskimos, who think it is moral to steal

from strangers though never from each other. At the other end are the diplomats who insist that their Great Power wants only peace and it is the rival Power which is doing the war-mongering.

Anthropologists call the attitude of Copper Eskimos a form of insularity—"the constant laudation of themselves and their own ways . . . a kind of personal vanity enlarged to embrace the group or tribe." What should we call its counterpart among the people of a Great Power? The problem of the control of war depends on a clearer understanding of in-groups versus out-groups. Is some such insularity necessary to stabilize a society internally? Most authorities feel that it is, but this conclusion needs more research.

Other corollaries are the cultural lag and the vitality of institutions and belief systems. Peace planners will make no progress simply by resolving that a given institution should be abolished, especially if it is still useful to someone. The best way apparently to get rid of a wornout culture trait is to replace it by another one. It follows that peace will not be won so much by ceasing to do things—such as manufacturing munitions—as by actively doing something else. What for instance? We will come back to this later and offer some suggestions.

Also on the store house shelves

In addition to the culture concept and its corollaries, social science offers a number of other contributions to help plans for peace. Here is a list of some of them:

1. The principles of administration as summarized by Leighton in *The Governing of Men.* These provide not only a guide to international policies but concrete tactics.

2. The work done on communication, which we have already roughly sketched. In one sense world government is primarily a problem in human communication, both in getting it launched and then in holding it together.

3. The work already done by psychologists and sociologists on aggressiveness, tensions, frustrations, needs for emotional security. This is preliminary to any plan for peace.

4. The findings of economists and others concerning the world-wide demand for economic security. Here is a very powerful engine to promote world government if it can be harnessed.

5. Studies by historians and political scientists of nationalism and militarism in the past. It is encouraging to learn from Charles A. Beard that modern political nationalism with its idea of absolute sovereignty is only about three hundred years old, first appearing with the Treaty of Westphalia. The territory to which nationalism and national sentiment apply, furthermore, is constantly changing. Think what a Russian conceives as "Russia" in 1948 compared with 1941; or what an American conceives as his in-group in 1948 compared to 1941. A very different physical map appears in both cases.

6. The polls of public opinion. These can be most useful in finding out how far the people of various nations are prepared to go in the direction of internationalism; also what their needs are, and what they can conceivably agree to.

7. The various techniques already used to control race friction in America, which with some modification might be applied to international frictions.

8. The knowledge already on file from area studies.

The above list, including the culture concept, is enough to make it clear that a scientific plan for peace does not have to start from scratch. The knowledge already available, however, will require a great deal of screening, interpreting, amplifying, and organizing. It is not a job for one man, but for a great big research team. It is not a job for one country, but for scientists from many countries.

Some Applications

After the material is screened who will put it to work, and through what institutions? Where are the men who can transcend their own cultures and really labor in the Lord's vineyard serving all mankind? There are a few at Lake Success, but most delegates seem never to have thought of the distinction. They assume they are there to represent their country's interest, to see that nothing is put over on Ruritania. It is probable that the United Nations will never amount to much until delegates begin to see this cardinal distinction and think in terms of "mankind first, my country second."

We find some world citizens among the committees and subgroups of the United Nations. The committees bring together specialists from various countries whose work is parallel but who have never had firsthand contact before, specialists who deal with universal human needs. UNESCO, too, has a number of serious and important projects, including:

A world-wide radio network.

The reproduction in microfilm of important literary, scientific, and artistic works for international distribution.

Cooperative centers in the Middle East, the Far East, and Latin America to advance science and technology.

The exchange of students between nations on a grand scale.

Radio and film projects to help people understand cultures different from their own. (Along the line of the documentary mentioned to illustrate communication.)

All this is excellent, but Russia has not yet joined UNESCO and so leaves a great blank space on the map. Perhaps more immediately useful will be a grant made by the Carnegie Corporation to Harvard for a team of social scientists to make an area study of Russia. Clyde Kluckhohn will head the group. He is one of the anthropologists who studied Japanese morale during the war and so is eminently qualified for this kind of engineering.

Area studies

The Carnegie grant brings to the fore again the whole important development in social science known as area studies. They promote communication, for they enable people in one area to understand the people of another. So far they are not two-way communication but they could be. We ought to welcome a truly scientific area study by the University of Moscow, let us say, of the United States, with the cold, objective results to be laid on the table before the Politburo.

The area teams which studied Germany, Japan, Leyte, and the Pacific have unfortunately been disbanded. We need such teams at this moment for the Hindu-Moslem situation in India, for the Jewish-Arab situation in Palestine, for the rise of nationalism in Argentina under Peron.

Already various American universities have selected areas for this type of study, and some good work has been done. John W. Gardner notes in the *Yale Review* that Russia is under examination by Columbia, Harvard, Yale, Stanford, and the University of California. Japan is the province of Michigan. Yale, Harvard, and California have the Far East, especially China. Texas, North Carolina, Michigan, and California have Latin America as a specialty. Yale is undertaking a program on Southeast Asia. Fiske and Northwestern are working on Africa; Princeton and Pennsylvania on the Near East; Minnesota on Scandinavia—and what could be happier?—Indiana on eastern Europe. But nobody is doing much of anything on such areas as the Balkans, Italy, Spain, France, Germany and Central Europe, or Britain.

We should develop thorough long-term research programs covering each of the various areas of the world, says Gardner, and expand our pitifully small corps of experts. Clearly we have here the nucleus for a major attack on the causes of war, and the insulated belligerence of in-groups, including our own. But some method must be found for putting area studies under the United Nations or other international auspices. It may be all right for Princeton and Michigan to do the spade work, but Oxford and the Sorbonne and Tokyo should also help; while the interpretation should be broadly international.

On human rights

A guiding policy for such studies can be found in the Statement on Human Rights already submitted by the American Anthropological Association to the United Nations. It consists of three short principles:

1. That the individual realizes his personality through his culture, hence respect for individual differences entails a respect for cultural difference.

2. Respect for differences between cultures is validated by the scientific fact that no technique of qualitatively evaluating cultures has been discovered.

3. Standards and values are relative to the culture from which they derive. Any attempt to extend the beliefs or moral codes of one culture must weaken the applicability of any Declaration of Human Rights to mankind as a whole. . . .

Even the colors we see, the sounds we hear, the very nature of the physical world are conditioned for us by our training, especially the language we speak. How much more must our ideas of "freedom" be culturally determined? Yet the American Anthropological Association reminds us that the Atlantic Charter when first announced by Roosevelt and Churchill received world-wide acclaim, showing that the four freedoms are understood and welcomed by people of diverse cultures. Later the applicability of the charter was twisted and restricted, its universal appeal was lost, and people around the world stopped thinking about it.

What are they thinking about now? For the first time in history it is possible to find out. Already there is what amounts to a public mandate in America to establish permanent peace and supersede armed defense by political agreement. A *Fortune* poll in December, 1947, showed 55 percent of Americans urging support of the United Nations, 20 percent wanting America to go further and start planning a world government, 4 percent unable to make up their minds between these two ideas. Only 10 percent of Americans on this count were strictly "isolationist." Eleven percent had no opinion.

This looks like another case where the people are far ahead of their government. Almost four out of five want something beyond nationalism. If 80 percent of Americans are favorably disposed—at a time when America is the mightiest power on earth—it seems reasonable to suppose that an accurate poll of other peoples would show even higher percentages. It seems reasonable, but we cannot be sure until the poll is taken.[1]

Call for More Knowledge

To catch up with the bomb, a psychologist wrote me, social scientists must start at the same conceptual level as the physicists did. To avoid the great danger of haste and go to the root of the problem calls for scientific courage of a high order. Men who are doing fundamental research should continue it even if they fail to see a clear application for it.

In addition some more obvious long-term projects deserve study. Good men are needed to analyze all aspects of such

[1] One is being launched in the spring of 1948, covering a number of nations.

a subject as the sentiment of patriotism, or the world food supply; men to work out comparative data on intercultural parallels and universal needs; men to study power and its dangers at every level; men to work on communication; men to draft specific goals toward which nations could cooperate; men to formulate ways of training young children for peace.

The atomic crisis has rushed on us so fast that it would be surprising if students had analyzed the situation well enough yet to ask the right questions. For instance, a paradox confronts us between the *legal* and the *cultural* approach to One World. Patriotism, the flag, national honor, "my country right or wrong" —through the cultural training we received as children these become matters of deep individual emotion to nearly all of us, often beyond logic and reason. Yet the political institutions to which these emotions cling can now be altered only in a legal way. Witness for instance the constitution of the United Nations with the veto provision. War has depended in the past on *both* kinds of action—political action by the state with many rules and regulations; emotional response, to the point of sacrificing one's life, by the citizen. Morale is a cultural product, bolstered by the in-group's dislike of strangers in all circumstances. In this confused setting the social scientists must use great discrimination in setting up research projects.

A great deal more light is needed on the key question of in-group versus out-group. A team of theoretic and experimental psychologists, along with experts in the culture concept, could help illuminate it. The problem lies deeper than the political machinery of states. "Do we have to declare war on Mars to maintain a successful world government?"—this gives the general idea, though it is hardly the proper scientific form for the query. Again, what are the probable limits of a single human society? From the face-to-face band can the in-group be expanded via modern methods of communication—radio, television, air transport, moving pictures, telephone—to include the whole world? Nobody is yet able to tell us.

Kurt Lewin's controlled experiments on the amount of aggression in various forms of boys' clubs should be checked by more tests, and at the same time extended to other groups. The experiments in reducing hostility in face-to-face groups should

be encouraged and expanded. What are the substitutes for unloading one's hostility and aggressions on strangers? Do active sports, especially when one kicks or smashes a ball, offer an alternative? Without safety valves the in-group has difficulty in functioning. How do the Swiss and Swedish communities keep such a large measure of domestic tranquility when they have not fought a war for a hundred years?

Another research task, proposed by Gordon Allport, is a careful analysis of cultural uniformities and human similarities around the world. This would be documenting what we have called the "universals." Here, the scientists might say, are characteristics common to humanity which can probably never be much changed, and on which One World must ultimately be built. These are the limitations that *must be accepted,* while others—the historical, legal, and political limitations whose short-run restrictions we feel so acutely—need not hamper our plans in the long run.

Research into what Edward Hallett Carr calls the "unsolved issue of power" is very much in order. The seven Great Powers of 1939—Germany, France, Russia, Italy, Japan, Great Britain, the United States—have been transformed overnight into two multinational power centers. Napoleon never produced anything so revolutionary as this as he tossed the horse-and-buggy power centers of Europe about over a period of twenty years. Political scientists, historians, psychiatrists, as well as sociologists, anthropologists, and various kinds of psychologists, could all be usefully employed analyzing power relations on various levels.

Other experts might study how to set up specific activities or goals on which *all* nations could cooperate. They might be launched under the auspices of the United Nations, to give us a better chance to work together. Suppose for example Antarctica were declared United Nations territory, with its resources to be United Nations property. Suppose an international armed force were sent to occupy it. Would this perhaps make a concrete beginning, in a part of the world not yet quite divided among sovereign states, for unified action?

Walter Hines Page proposed in 1913 that the nations of the world start a common project to introduce sanitation into the tropics as a safety valve to prevent an explosion of international tension. The proposal was never carried out, nor was the explosion

prevented. Mr. Page's idea would have turned human energies to medical and economic rather than military action. A similar proposal is to reforest the bare areas of earth.

Other urgent economic goals confront us now in 1948. Economists, political scientists, and geographers have a big task ahead of them in calculating the probabilities of food supply catching up with the birth rate in the world as a whole; in tracing maldistribution of raw materials among peoples; in striking a balance sheet of the Have-Not regions as against the Haves; in proposing techniques for exchanging goods under a world government. Monopolies by national governments would be clearly illegal, while world free trade on the 1870 model might be unworkable. How then shall we get the goods equitably exchanged?

Another urgent piece of research is the development of peaceful outlets for atomic energy, including medical, metallurgical, and biological uses for isotopes. Here is a dynamic task which has already aroused the people of the world. An international agency, such as the Lilienthal plan proposed, for the control of uranium, thorium, atomic bombs, and all aspects of atomic energy seems to me to be the first great step toward world government.

Another project suggested by Beardsley Ruml is to investigate how American money and American technology can help to raise living standards in "backward" nations without following the old pattern of imperialism and exploitation. What the United Fruit Company is now doing in promoting agricultural research for Mid-America, what the oil companies are doing in Venezuela to raise native standards, what Nelson Rockefeller is doing with his new corporation, furnish significant data for such a study. Under this head atomic energy appears again. The logical regions in which to establish the first large atomic power plants are the low energy centers of China, India, Brazil, Africa. What is the best way for the world to go about this colossal task of installation?

With all this directed research, the experts would simultaneously be working on more general questions. Why do certain measures that governments take in good faith for peace actually bring them nearer to war? Why do military measures for defense turn automatically into offense? Not daring to train children for peace why must we virtually train them for war? Contradictions

like these are obviously close to the root of the trouble, and they should be attacked by scientists, especially by social psychologists.

Big Team

A government that could bring itself to admit it was not quite omniscient or omnipotent would be a wonderful help at this point in history. It is hard to picture Washington or Moscow or London making the announcement: "We don't know the answer, but we are going to try to find it. Here, under the sponsorship of the United Nations, is a group of the best scientists and social engineers in the world, financed as generously as the Manhattan project. But this time they are organized to find a way to One World, the four freedoms, and the final end of war."

What a thrill that would give the people of their own countries and the people of the world! The first news of the Atlantic Charter would be as nothing compared to it. Specialists in every country and in every field would have something to contribute to the project, some knowledge to add, some laboratory or clinical work to do. This in itself might prove the psychological equivalent of declaring war on Mars. Or it might not.

We have suggested only a few of the projects, given the merest hint of the range and scope needed to find a scientific road to peace. It is not our function in this book to try to outline the massive research, or to anticipate the result of this greatest of all reforms. Perhaps the organizing task, the setting up of the problem, asking the right questions, will prove to be the hardest part. It was so in the Manhattan project.

In the last twenty-five years it is probable that more dependable knowledge has been acquired about human behavior and human relations than in all previous history. We have looked at only a fragment of it in this study. In the next twenty-five years, with real encouragement from citizens and governments, progress should be much faster, following Ogburn's exponential curve. Who knows if another quarter-century would not give us a clear and workable formula for One World, supported by impregnable research and the full authority of science?

But shall we have the time in which to find it?

CHAPTER 26

Review of the Findings

WHAT have we learned from our rough and ready survey across the front of the social sciences, in this the third year of the Atomic Age? The reader must, of course, answer this question for himself. For my part, the journey has given me courage. Knowledge is available or can be made available on a scale most of us are totally unaware of, to help solve many baffling problems in human relations.

I do not know how long it will take to solve them. I do not even know whether the scientists who are eager to go to work on them will be permitted to do so. I do not know whether time will run out before the answer is found to such problems as world government. People say it is later than we think, but that is a meaningless statement. Nobody knows how late it is.

We have learned in our survey that there is no difference in the approach of a natural or a social scientist to a given problem. The scientific method is identical, embodying the ten characteristics set forth in chapter 2, but the subject matter is different. Natural scientists, furthermore, have many stout ladders reaching back to Galileo, while the social scientists have only recently forsaken authority, intuition, and pure logic for the harder road of observation, deduction, and verification.

A contrast

To illustrate the difference again, here are two practical questions perplexing a practical man.

George Rutherford Adams, our friend from Middleburg, finds

the cellar of his house filled with water one March morning. The plumber suggests a siphon, and together they rig one with a section of pipe and garden hose. The water goes up ten feet vertically, then passes out a high window and down the hill beyond.

"Why does water run up hill?" asks George, with two years of high school back of him.

"Because it's a siphon," says the plumber, "you know, that's what a siphon does . . . air pressure or something. It won't go over thirty-two feet; I know that." The plumber is obviously a technician, not a theorist.

This leaves George uneasy in his mind and the next time his friend Professor Blake comes around for gas, he puts the question to him. The professor gets out pad and pencil and with a minimum of words explains the principle of a siphon in a simple drawing, with arrows for the weight of air. George's curiosity is satisfied. The answer is clear and direct. Every physicist and engineer from New York to Odessa, furthermore, will agree that this is the way it is, without argument or dialectics. Before the principles of vacuums were worked out there were arguments enough, and hot words, and doubtless fist fights.

But suppose a depression strikes in the next year or two and George is on the point of losing his garage. Customers have dwindled, business is bad, creditors are crowding him.

"Why?" he asks the town banker.

"It's a depression," says the banker. "You know, a downswing in the business cycle . . . every fourteen years, or is it eighteen?"

"What caused it?" asks George, still puzzled. The banker snaps: "It's those unions; they started it with their third round of wage demands!" He drives off damning John L. Lewis.

Once more George is uneasy in his mind. He asks everyone who comes along what caused the depression.

"The Democrats," says the town boss, "with all this spending . . ."

"It's the Russians, they started it all. . . ."

"It's those bureaucrats in Washington. . . ."

"It's the British with all the handouts they've talked out of us. . . ."

"It's the Jews. . . ."

"It's Big Business trying to break the unions. . . ."
"It's those profiteers who wouldn't cut prices. . . ."
"It's the Marshall Plan. . . ."
"It's sunspots. . . ."

And so on and so on. Each person George consults has a different reason or a different angle to a similar reason. Each is very positive and very angry at somebody, usually a high order abstraction like "business," or "labor," or "Republicans," or "bureaucrats," or "the British."

You see how much easier it is for George to find out about the theory of siphons than about the theory of depressions. The natural science question is settled and agreed to by all competent observers; the social science question is still up in the air.

But already, as we saw in chapter 19, economists know a good deal about business cycles and how to control the dizzier convolutions. If we should let Dr. Galbraith and his friends rig an economic siphon they could probably get most of the water out, and George would not lose his business.

Methods are available to halt depressions; methods more complicated than a siphon because of the greater number of variables. But not enough people know about them yet. There is a lot of detritus in the form of stale and unprofitable theory to be swept aside before scientists can apply the techniques developed in the great depression. This is what social scientists are constantly confronted with: old hypotheses which do not fit the modern problem, along with a widespread public conviction that every citizen, free and twenty-one, knows all the answers.

The scientific method again

In Part I we sought to define the broad field of social science today, with the five disciplines of cultural anthropology, social psychology, sociology, economics, and political science as a base. We showed how they were beginning to merge into a single science of man.

After accepting the theoretical validity of the scientific method in studying human relations, we illustrated it with a detailed description of aptitude testing in the Army Air Forces during the war. All the major characteristics of the scientific method

were found to be in evidence, including the pragmatic test; it worked. On the basis of techniques which picked out those young men who were most likely to be good flyers, the fleets of the air were manned, hundreds of battles won, and thousands of lives saved.

There is no end to the evidence and it amply justifies two conclusions: first, that the scientific method can be applied to the study of human relations, and second, that it may be the only method which can extricate man from his present mounting trouble. Kurt Lewin put it this way, shortly before he died:

> The bomb has driven home with dramatic intensity the degree to which social happenings are both the result of, and the conditions for the occurrence of, physical events. Gradually the period is coming to an end when the natural scientist thinks of the social scientist as someone interested in dreams and words rather than as an investigator of facts which are no less real than physical facts, and which can be studied no less objectively. . . . In the social as well as in the physical field, the structural properties of a dynamic whole are different from the structural properties of the sub parts. Both sets of properties have to be investigated . . . but there is no difference in reality between them. If this basic statement is accepted, the problem of existence of a group loses its metaphysical flavor. Instead we face a series of empirical problems.

Throughout the history of mathematics and physics the constancy of relations rather than the constancy of elements has gained importance, and gradually changed the picture of what was essential and the methods for attacking new problems. The social sciences, Lewin believed, show a similar development.

This departure is very clear in psychology, where scientists are getting away from exclusive concentration on the behavior of the individual, and are studying him in relation to his group and his culture, often in cooperation with anthropologists. Only so can the individual be brought into scientific focus. The social scientists, following the physicists, are discovering their own forms of relativity.

President Conant of Harvard has no doubts about the coming of age of social science. "It is my belief," he says, "that methods have already been developed to a point where studies of society by competent scholars can provide basic information to assist all

those practical men who struggle with . . . human relations. . . . The cooperation between medical men and psychologists and psychiatrists must be strengthened. . . . Few people realize how much progress has been made in the last decade and what techniques are now at hand to assist in the solution of practical problems. But it is the future which is exciting. . . ."

Sampling the Field

In Part II I have tried with the reader's help to make more explicit this progress which "few people realize." We have given chapter and verse so that more people could see and be impressed with the groundwork already laid. We could not begin to cover the whole field, for that would require a revised edition of the *Encyclopedia of the Social Sciences*; but we selected samples which the author felt competent to discuss, after checking their importance with a panel of expert advisers.

The culture concept

The outstanding accomplishment by almost unanimous acclaim was found to be the culture concept. At pain of repetition, I cannot forbear a last comment on this cardinal principle. The concept, developed jointly by anthropologists and sociologists, came into public view about a generation ago, with presumptive proof that Cro-Magnon man had as good a brain as modern man. It follows that a Cro-Magnon baby, miraculously transported to 1948—say by H. G. Wells' time machine—would have an equal chance without overtaxing himself of getting into Harvard and being graduated with honors.

The culture concept provides a stabilizing element to one's thinking in this careening postwar world. When one gets a firm grip upon it, he knows, on the highest scientific authority, that he belongs to something more enduring than his nation. He feels himself part of a process which has been evolving for a million years. Even World War III, if it comes, will not shatter that process completely. Somewhere the bands will re-form; mankind will go on.

Most of us are sublimely unaware of the culture which supports us and at the same time walls us in. We may think that we are

"free;" but social custom governs 90 percent—to name an arbitrary figure—of everything we do. To be really free, as a tiger is free, would strip us of our humanity. Social relations would mean nothing except an occasional stormy mating and minimum care of offspring. Language would be unnecessary and we would become a different species altogether. How many of us in Western civilization who so earnestly discuss "freedom" and the priority of the "individual" are really aware of this? Yet until we bring it into our thinking we cannot understand human freedoms, or governments, or social contracts.

Once we grasp the collateral idea of cultural lag—that gulf, wide or narrow, between the facts of the current world and our beliefs about them—we suddenly understand the behavior of reactionaries everywhere. Yet the lag has limits; sooner or later the belief systems must cave in before the facts. That helps to explain the rise of such leaders as Hitler, Mussolini, Lenin, Peron. When belief systems are cracking because of war, depression, technological imperatives, leaders arise who are willing to act as agents of change and we should not be surprised at their appearance.

The culture concept dissolves old ideologies and eternal verities, but gives us something more solid to stand on. Or so it seems to me. Prediction takes shape, the door to the future opens and light comes through. Not much yet, but enough to shrivel many intellectual quacks, oververbalized seers, and theorists whose theories cannot be verified.

Other accomplishments

Many other contributions of social science were examined in Part II, but it is interesting how many were linked to the culture concept. This is probably as it should be, for the study of man is concerned with man as a social creature, and culture governs his society. Leighton's work at Poston was based on the culture concept, along with psychiatry and social psychology. Out of it came a significant series of generalizations for the guidance of administrators everywhere.

In chapter 10 we saw how social science has demolished old hypotheses about racial differences. If it has not established the principle of equality, it has established the negative statement

which is almost as strong: namely, no evidence has yet been found to warrant the belief that the races of mankind are inherently unequal. The real race problem therefore is how to get this knowledge out on the front line. We noted also the distinction between race *prejudice*, which is in one's head and cannot be removed in a hurry, and *discrimination*, which is on the statute books and could be rescinded overnight. Social scientists like Donald Young and Charles Dollard believe it possible to eliminate various legal discriminations ahead of the prejudice. Ultimately this helps to break down the prejudice.

We investigated the laws of social change and saw how rigorous these can be, and how they permit change to grow at exponential rates. We watched Ogburn develop the future of the airplane from the curves of the past, noting that both culture theory and mathematics are cardinal in such studies.

We walked through a dozen Middletowns where the techniques of the anthropologists studying primitive tribes, enriched by social statistics, public opinion polls, and social psychology, have been applied to modern communities. The results were so arresting that we suggested they should be gathered into a handbook for the guidance of municipal authorities and social workers. The Yankee City studies of Warner were particularly noteworthy in breaking ground for new social theory and for many new techniques. Students will be discussing his six social classes for years.

In a factory room at Hawthorne, Illinois, we watched the nimble fingers of girls assembling telephone relays, while their production rate was automatically counted. What a mass of detritus in labor-management ideas this controlled experiment swept away! Warner's study of a strike in the Yankee City shoe factories was equally dramatic and established similar conclusions.

These conclusions, highly abbreviated, are that people work better if they are sure of their status and of recognition; that the factory system has tended to destroy people's status, and thus their pride and willingness. Unions help replace the loss; but only a profound change in the thinking of management can restore the worker's interest in his work. Fortunately, that change is under way. Much progress is to be noted since Elton Mayo

took up his duties at the Harvard Business School a quarter of a century ago.

Next, we took a modern polling operation apart, inspecting all the eight stages and appraising their scientific dependability. The operation is based on the laws of probability and sampling theory, and its reliability has been demonstrated in four presidential elections. We saw how the polls have established the validity of political democracy in a way that no argument, no logic, no sentiment has ever been able to do.

The jungles of economic theory were explored, including that curious metaphysical creation, the Economic Man, functioning as he is supposed to, without benefit of either glands or culture. By contrast, a few professors, like Wesley Mitchell, have been calling for new theories based on studies of actual human behavior in relation to money, prices, production. We noted with growing respect certain practical techniques worked out by young economists during the depression and the war. These indicate that some verifiable and useful economic theory is probably close at hand. Teamwork with the other disciplines seems to be needed more than anything else to make economics a genuine department in the science of man.

Political science and public administration were then inspected. Here again we found some fine techniques and a good deal of unverified theory tracing back to Plato. The law of averages and the frequency distribution curve are constantly used in various fields of public administration, and these statistical procedures, of course, are strictly scientific.

We watched teams of social scientists out in the Pacific Theatre finding the major characteristics of an island, or of Japanese morale, by remote control. We watched members of the Strategic Bombing Survey swarming across the German frontier, only a jump behind General Patton, to determine what actually happens to the people of a great nation when two million tons of bombs are dropped on them. What they found taught us a good deal about the behavior of a human society under tension.

We stopped before the cages of a monkey and some white rats at New Haven to see how they contributed to an elaborate and stimulating theory of the learning process. Already social scientists are beginning to show us how to introduce children into the

culture (another name for the process is education) with less wear and tear and human waste.

We saw how science is undermining standard theories about punishment as a deterrent to crime and trying to replace them with sounder theories. We noted how a zoologist, turned social scientist, has published the first large-scale study of the sex impulse, with great potential effects on medicine, law, education, belief systems.

Implications

In Part III we try to point up some of the implications and conclusions flowing from this array of evidence. We note how social science, like natural science, is vitally dependent upon good communication. If Scientist A does not know what Scientist B is talking about, they can never agree on conclusions and thus can never deliver any knowledge to the storehouse.

Nine different varieties of communication study were inspected, from advertising to semantics, and a chapter was given to the last. Many scientists are turning to this vigorous young discipline to aid them in ordering concepts and in formulating the right questions for research.

Semantics, like the culture concept, is an active destroyer of delusions—in which one sees things going on in the world outside which are actually not there. The real enemy, as Edmond Taylor says in *Richer by Asia*, both in the East and West is delusion—not the delusion of the insane, but the fragments of neurosis and delusion in normal men, which come so often from mistaking words for things. What is needed is "a discipline whereby the normal man can train himself to become something healthier than a normal man, to become an athlete of reality."

Any victory over delusion in one man's mind is a public act, and the enemies of delusion—whether undeluded soldiers or undeluded pacifists—are partners in the attainment of One World whether they know it or not.

Finally, we exposed reforms and reformers to what we had earlier learned, with somewhat distressing results. Social scientists find that many earnestly supported reforms are in the nature of perpetual motion machines. At the same time, we saw that social

science can be of great aid in getting objective reformers—as distinguished from pathological reformers—back on the main track, showing them what can and cannot be done.

We discussed political and economic reforms on local levels, on national levels, and finally devoted a chapter to exploring the greatest reform which has ever challenged mankind, how to achieve One World. In a sense, the whole book leads up to this inquiry.

Science versus self-sealing doctrines

These accomplishments have been repeatedly tested throughout our study by a single question: Is this an application of the scientific method as defined in Chapter 2? So far as possible I have tried to select examples which illustrated the scientific method, to show again and again that science with its rigorous objectivity, even if it did not include a white tiled laboratory and a Van Dyke beard, was at work in the field of human relations. This kind of example we labeled social $science_1$.

Sometimes we encountered social $science_2$, where facts are gathered and theories evolved and then the student halts—like Marx or James Burnham—without adequate verification of his theory. We lodged no complaint against this procedure, *provided* the student clearly warns us that he is presenting an unverified hypothesis. Few, alas, have had the scientific humility to do this in the past. Mostly they have handed down their theories as finished products. Here, they have said in effect, is Truth.

Much of what has been called "social science" is unverified theory, or even pure speculation about human relations devoid of careful observation, and loaded with ideological and ethical judgments. This may be legitimate enough in the humanities, but should not be included under the scientific method. This is the domain of what Oppenheimer called the "self-sealing" doctrines, where alert and polemic disciples jealously guard the original manuscript from any inquisitive outsider who tries to verify the conclusions.

We also encountered cases, especially in economics and political science, of good sound observation followed by excellent practical techniques but lacking theoretical foundation. Probably Messrs. Galbraith, Ruml, and Alan Sproul could, if we gave them the

power, act as an advisory committee to keep the dollar circuit in better order than has ever been the case in this country. But we still lack, in spite of Lord Keynes, an adequate general theory of money.

Science cannot progress without constant transfusions of theory. Without it techniques harden into use and wont. Social science stands in particular need of more research, more theory, more light. In the next and final chapter we shall explore some ways and means for finding them.

CHAPTER 27

Toward a Science of Man

CIVILIZATION is inconceivable without some applications of the scientific method. A long period of careful experimentation must have been responsible for civilization in both the Old World and the New. In the former it resulted in wheat and rice, in the latter in maize. Hundreds of simple experiments in plant breeding must have been carried out before a storable grain was developed. Wheat, rice, and corn ended a million years of nomadic living and made cities and settled communities at last possible. Our high energy civilization of today rests upon a whole series of scientific inventions which, among other things, have more than doubled the population of the world during the brief period of the industrial revolution.

The scientific method underwrites the existence of most of us, no matter how much we may deplore "materialism." No science, and back to the jungle; more science in the form of lethal weapons, and back to the jungle by another route. Mankind is inextricably involved at every step with applied natural science, but has only recently begun to give attention to civilization itself in a scientific way.

The skeptic assumes a superior expression and says that the attention to problems of living has come too late, and is not very dependable anyway. "We're done for," he amiably observes. "The human animal is well on the way to extinction. It displays the accepted biological evidences, and now in the mass exhibits the usual mental evidence of approaching death." These cheerful sentences are in my mail this morning from a friend. But even

our present inadequate survey shows far more knowledge available than skeptics have ever imagined. They have made no count, but follow the primrose path of leaping from an unwarranted assumption to a forgone conclusion.

We are yet, however, a long way from knowing how to live with everybody. Many fundamental questions have been answered but many others have not. Mankind can be none too sure of the future until they are answered. The point is that we know how to attack them and that more and more social scientists are eager to begin the assault.

Some unanswered questions

Earlier we presented a list of what we called "great unanswered questions," and throughout the book more have been raised. In Chapter 25 we raised the most pressing of all: How can mankind stop war? and were rash enough to outline a procedure by which scientists might approach it.

No one is more keenly aware of the gaps in their knowledge than the social scientists themselves. Their humility seems to increase with their attainments. They call for the most fundamental reorganization of their subjects, for integration and restatement, for fruitful hypotheses, for new theory, for a basic philosophy around which to unify and make available great masses of existing knowledge.

Here are a few examples of their searching self-criticism:

John Dollard: The most crucial gap . . . is the lack of a useful and workable psychology. We still do not know in any detail how personality is acquired through life in the family and the social group. . . . We do not understand how the habits and attitudes toward loving and authoritarian figures of the family and school are shifted, as they seem to be, to the symbolic figures of the society. . . . We have little knowledge of the all-important question of how language is acquired by the child . . . which . . . should at the same time give us a hint about how it is later "used" as thought, plan, inner dialectic.

Louis Wirth: The major gaps . . . are in the fields of race relations, industrial relations, international relations, public opinion and social attitudes. . . . Our knowledge is fragmentary . . . it lacks solid theoretical foundation . . . is not reinforced by controlled experimentation or thoroughly tested hypotheses. . . . We have shied away . . . from

analyzing the bases of public policy and the interrelations between facts and values. We have done very little . . . in making studies of the value systems of our society.

H. A. Murray: I would appoint a commission of the five most suitable social scientists . . . with a firm grasp of psychological realities and experience with practical undertakings . . . to spend five years working . . . to build a conceptual scheme which would integrate most of the theories and hypotheses that are now available and useful . . . and outline a general course of research . . . for the coordination of efforts. This would save millions of man-hours devoted to fruitless efforts. . . . What I am asking for here is not a Newton or a Faraday . . . of social science, for this is something which cannot be manufactured. . . . If you are going to catch the atom bomb, you must start at the conceptual level from which atom bomb research started. Attempts to cut corners . . . can result in nothing important.

Alexander Leighton: We have on the one hand a richness of theory and on the other a richness of techniques and methods. So far, there has not been sufficient breakdown of theory into sub-hypotheses which can be tested by the techniques and methods. We are, therefore, often a prey to false theories and the false prophets who expound them. . . . There is still too much individual work, with personal laurels. . . . Almost none are willing to face the reality that we have in science a tool which can enable us to make the tool, which will make the tool, and so on, till we come to the tool which will give the answer. Be it a long or a slow process, it is the only hope.

M. J. Herskovits: The major difficulty . . . results from isolation and fragmentation. . . . Some of the most fruitful researches to be made are in the field of social psychology . . . drawing on . . . the psychiatric disciplines . . . also drawing on the materials and using the methods of the other social sciences. . . . The contribution of social science . . . must be based on broad philosophical concepts if it is going to be effective in particular situations. . . . Literally millions of dollars have been spent to "solve" the race problem, which has been deemed so urgent that neither time nor resources to any comparable degree have been made available for the analysis of underlying factors.

Gardner Murphy: We need to know the precise ways in which motives of gain (in the broadest sense) articulate with ego motives (prestige, power, etc.). . . . Most social scientists know hardly more

about such motives than does the man in the street. . . . The psychology of political leadership, even in our own culture, is still in the horse-and-buggy stage. . . . We need a systematic study of the psychological structure of Soviet society, including its leadership, and of our own society, including its leadership; with a determination to get our fingers on those human motives that might, even at this late date, make people . . . capable of clear thinking. . . .

Below are some outstanding general questions to which most social scientists agree that more complete answers are needed. Note their depth and their theoretical nature. Note, too, how they interweave; and the fact that each should be supplemented by many collateral inquiries.

1. *How can present knowledge be first integrated and then applied?* This involves, first, the cooperation of many specialists and their agreement on a unifying philosophy or goal; second, relations between scientists, social engineers, and community leaders; third, the whole question whether man can transcend culture enough to "act in accordance with what he professes to believe"—that is, to use his reason in solving his problems.

2. *What specific changes have been caused in our culture and in the world balance of cultures by science and the machine?* An answer to this would probably include such matters as the sudden expansion of population which has been called "mass production of humans," followed by new and unprecedented kinds of mass behavior, including many symptoms of insecurity, and finally mass destruction through scientific warfare.

3. *How can scientific psychology be extended and verified to give a more dependable explanation of the behavior we observe in daily life?* This may involve integration of various psychological schools, including psychiatry, and new techniques in studying human motives. The question involves a clearer understanding of the process by which children become an active part first of the family, and then of the culture.

4. *What dynamic process underlies the structure of a human group?* How does the leader gain his power? What differences appear when a face-to-face band is enlarged, and what are the limits of its enlargement? How does morale depend on communication? How does all this apply to race and nationalism?

5. *What is "freedom"—in terms of our culture and other cul-*

tures? What "universals" underlie this concept? How is it related to the need for security; to the processes of communication?

6. *What is the place of value judgments in social science?* Must these always depend on the mores of a single culture or can a common denominator be found?

We shall have more to say about the last in a moment, for it is often asked in different forms and it is important. The questions have been phrased colloquially to communicate the idea readily to the reader. When experts undertake to answer them they will have to be phrased scientifically. To ask the right questions in the right form, as we have said before, is half the battle. . . . Like Luther we nail these articles to the cathedral door. Here are queries beyond the present knowledge of any man alive. But every man needs to have them answered, whether he is aware of it or not.

Five roads

The scientists cooperating in the Manhattan project got an answer to the practical problem of applying atomic energy in about four years. How shall scientists go about getting answers to the above questions and others like them? There are at least five well-marked roads.

1. *A gigantic project to make a plan for permanent peace.* This has already been suggested in an earlier chapter. It will be found that if this fundamental question can be answered many other problems of human relations will be solved at the same time for it leads into practically every field. It is important that the project be set up under international and intercultural auspices, an agency to represent all the people of the world.

2. *More teamwork* is needed in the present disciplines. The war demonstrated how fruitful can be the cooperation of sociologists, economists, psychologists, and the others.

3. *The all-out encouragement of more talented young people* to make a career in social science—research and theory, social engineering, teaching.

4. *More funds for social science,* especially for research on the unanswered questions. The passage by Congress of the National Science Foundation bill, with the understanding that social science[1] is science, would be most helpful.

5. *More public awareness* of the field and more mass support. Every man and his wife should begin to feel in their bones that here is perhaps the best single hope for survival in the atomic age.

The aim of social science is to cut through the myths and illusions, and see truly how things are out there in the real world; what people are really doing out there. Perhaps, as the skeptics are never tired of pointing out, the light will prove too bright; perhaps *homo sapiens* cannot carry on without his myths and illusions and distortions of reality. Perhaps; it is, however, a raw hypothesis. There is no shred of evidence that we cannot stand the light, for we have never been exposed to it. Only in the last generation have we got the first faint gleams.

Teamwork

The problem of teamwork has two important aspects. The first is a receptive attitude *within* the professions, as more economists or political scientists, let us say, come to realize that they cannot solve their problems without help from the other disciplines. In the Manhattan project the nuclear physicists were brought to a standstill until the chemists analyzed the properties of a tiny speck of plutonium. The second aspect is the actual organization of university departments combining several disciplines—like the Department of Social Relations at Harvard; and of teams for specific tasks—like the area studies in the Pacific.

One of the most useful undertakings imaginable would be a committee of outstanding scholars to unify the assumptions of all the disciplines, eliminate the contradictions, and bring conclusions up to date. H. A. Murray called for this. They should be armed with brooms for the constant sweeping of detritus, remembering what Dr. Oppenheimer said about modern physics: "We learn to throw away those instruments of action, and those modes of description, which are not appropriate to the reality we are trying to discern. . . ."

In this cosmic housecleaning out would go vested interests in useless theories, no matter how respectable; out would go practically all of social science$_3$, a good deal of social science$_2$, and the gobbledygook and ornate terms which block rather than serve communication. Many technical terms are necessary, as in natural

science, but the criterion should be *function* rather than power to impress the innocent bystander. Psychology especially has a wonderful semantic housecleaning ahead of it.

> It was not the generals who won the war for the British, but the professors, and they won it by cooperatively applying the scientific method to every phase of fighting. Strange as it may seem, zoologists, geneticists, mathematicians, psychologists, anthropologists, physicists and chemists, worked together in teams to solve problems presented by German bombers and submarines. . . .[1]

Thus teams of social scientists were merged into teams of scientists to win the Battle of Britain. Before the war emphasis in the graduate schools was on training students to be competent, clever, and critical within the high walls of their own discipline. The idea was to see who could most effectively annihilate whom. The war demanded cooperation between disciplines and an end to this competitive intellectual mayhem. Social scientists found it hard at first, after their training, but most of them came to like the teamwork much better in the end. "Each came out of it," says John W. Gardner referring to OSS area studies, "with a new respect for the special competence of the others." Some time in the not too distant future a group of graduate students may even be permitted to submit a joint thesis. Then we shall know that the millennium has come!

This brings us back to the idea that teams not only go out to win wars, but far more important, they should go out to study the dynamics of peacetime wherever something socially significant is going on. Social engineers should be ready to leave their desks to study a big strike, a hearing of the Un-American Activities Committee in Congress, a mine disaster, a series of sex crimes in a city suburb, a heated session of the United Nations Assembly at Lake Success. They should be prepared to go as fast as public health officials go when they hear a report of bubonic plague. Perhaps the social engineers can even head off a race riot—as men from the University of Chicago have been said to do.

Who is your social scientist?

Some day when the work of social scientists is neatly collated in the storehouse, no government department, large corporation, big national union, or benevolent enterprise, no powerful com-

[1] Waldemar Kaempffert in the *American Scientist*.

munity leader, will think of making important decisions without consulting social scientists or their findings. Cases like Leighton's work at Poston, instead of being unique, will be typical.

Standard procedure today is unfortunately very different. When a crisis develops demanding decisions—such as a coal strike, or a European crisis—press and public and Congress tend to consider it as something standing alone, with no relation to anything else, no roots in the past, totally unexpected and wrong-headed, to be decided at once, with somebody to be blamed and hopefully punished. John L. Lewis and the Russians are the culprits in the above cases. Observe that all Russians are blamed, not Stalin and the Politburo alone; while only the miners' leader is blamed, not the 600,000 miners who are "misled."

This pattern has been repeated endlessly, probably since the fall of Troy. Yet if the crisis is met by punishing somebody it is usually either aggravated or postponed. Nothing is really settled by such Stone Age techniques. Perhaps there is no group of social scientists in 1948 with sufficient knowledge either to halt the European crisis, or avoid the next coal strike. But there is certainly enough knowledge now on file to bring far more characteristics in, and to make a far more intelligent analysis.

The question of "values"

The last unanswered question in the list submitted earlier was whether value judgments were permitted in social science. Let us see what President Conant of Harvard has to say on this score, in the same address referred to in the last chapter. Science, he observes, is supposed to be neutral. But medicine is not neutral about disease. Medical science tries to understand in order to cure. The understanding, or laboratory process, must be rigorously objective. But the motive and the application, or patient's bedside process, constitute help for suffering humanity. "These postulates are basic to all work in medical science. . . . I believe that the situation is analogous in the case of scientists investigating human behavior and human relations, but the analogy has not yet been fully realized."

As long as natural scientists make a firm distinction between research and application, so must social scientists, as indeed they have done fairly consistently. The anthropologists and the psychiatrists made their great advances in recent years by deliberately

withholding moral judgments while trying to observe what actually occurs within a primitive community, or within the disordered imagination of a mental patient.

Values will inevitably influence the choice of subjects to be investigated—as Dr. Kinsey chose to leave zoology for studies of sex to help answer the insistent questions of young people. Then values should be put aside during the objective process of investigation, as Kinsey puts them aside in a typical interview. When the time comes to apply the findings, back come the value judgments. The Hippocratic Oath is intended for doctors who *practice*; who administer to sick people the drugs, therapies, and techniques devised by the coldly objective laboratory scientists.

We can look at the question of morals from another angle. The culture concept goes far to uphold the philosopher's dictum, "to know all is to forgive all." There are no "bad men" in social science, any more than in the mind of Jesus as history portrays him. There are sick men, some of whom should be removed from society until they are well. There are men of varying abilities, showing the usual frequency distribution curve, with the very wise at one end, the very dull at the other, and most of us in between.

Again, the dominating drive of social scientists, as I read their literature since Hiroshima—spurred on perhaps by the atomic physicists—is to develop world men who can rise above their culture and see the planetary shape of things. Such men can be against Martians, or soil erosion, or typhus, or slums or famine—but they cannot be against men. They have come full circle back to their own kind.

Finally, there is the important point not often emphasized that science by definition can be pursued only by methods of the most scrupulous integrity. It is the sole discipline where you cannot lie even to yourself. If you do the experiment will be ruined; others cannot check your results. You cannot equivocate, crawl, dissemble, cover up, or distort the figures. You are perpetually out in the sun; there is no shade anywhere for erring human nature. One misstep and you are thrown into outer darkness with no road back.

On the whole I do not think we need to be too deeply concerned about any absence of "values" or ethical considerations in social science. In some form they will frequently be met. One

professor as we noted earlier is teaching cultural anthropology as "Ethics."

This book has been an early and perhaps a brash attempt to gather the data, work out relationships, and place the studies dealing with man under a scientific spotlight, trying to find knowledge which can be depended upon. Prior to the Manhattan project and the techniques developed during the war, such a survey would hardly have been feasible.

It is important that social scientists realize their vital new role, and devote themselves with great singlemindedness to the task of accumulating more verified knowledge and ever sharper engineering tools. The future of civilization, if not of mankind, may depend on what they can accomplish in the next few decades.

Such devotion does not mean rigorous research and verified theory alone. Let us have plenty of hypotheses, only label them plainly preliminary; and even some pure speculation, only label it speculation. Out of this mental furor may come creative ideas for further objective study, and out of the study, further ideas.

Social scientists, it seems to me, should more and more imitate the *community* idea among natural scientists, where wise and competent experts in the various fields are ready to judge new projects, outline experiments, and above all, ready to repeat observation and experiment for final verification. Already we have gone far enough to show the senators who were considering the National Science Foundation bill that social science is not a mongrel collection of 'isms and 'ologies. But this is nothing to what it will be possible to show them before long.

All the Great Questions in the last analysis on the highest level come down to two:

How can man come to terms with nature?

How can he come to terms with his own kind?

Social science is primarily concerned with the latter and somewhat concerned with the former. It seems to me that these are moral values, at least in a special and important sense. They are planetary morals above and beyond Buddhist or Christian or Moslem orthodox rules and codes. They are something to which every human being from the North Cape to Patagonia can agree.

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